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Networking

DTP

Acceleration

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MultiMedia & Beyond

This Issue: The Amiga Effects On "Babylon 5"

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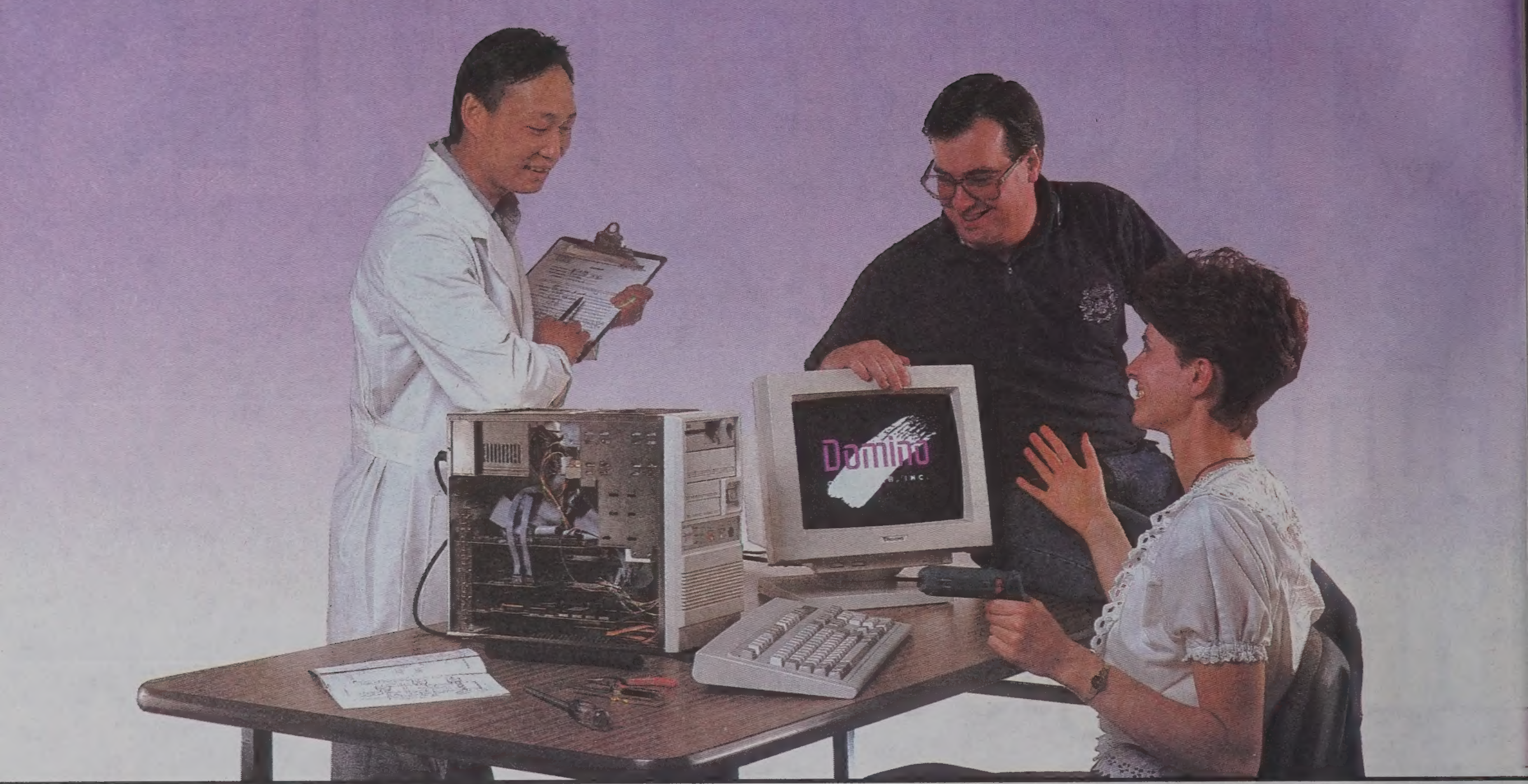

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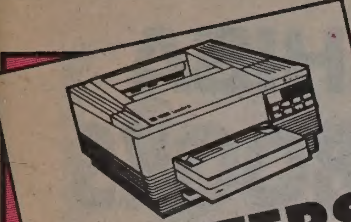

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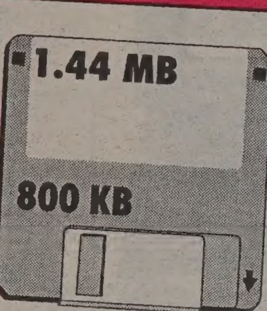

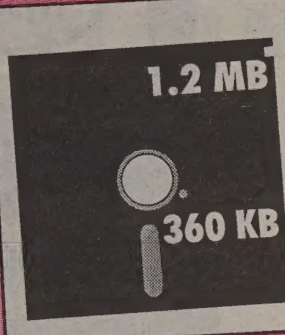

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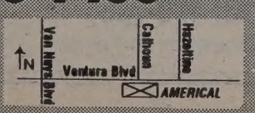

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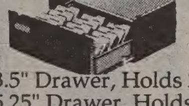

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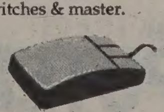

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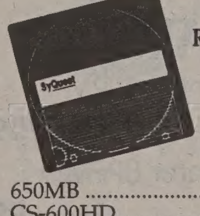

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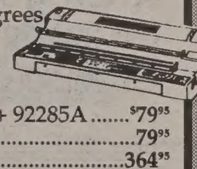

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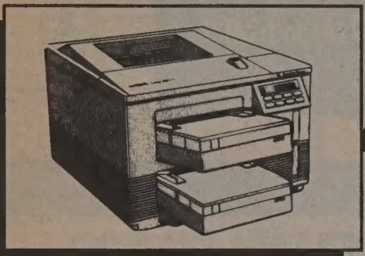

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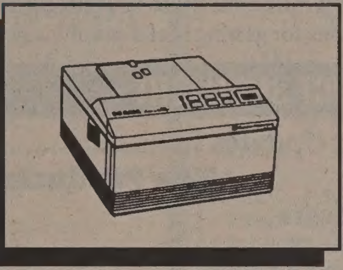

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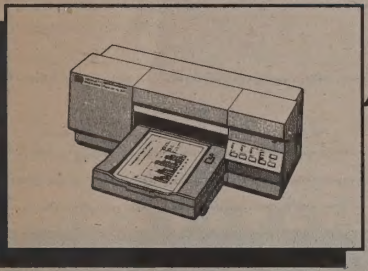

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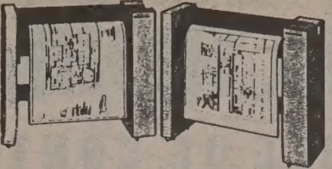

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A NOTE FROM THE EDITORS

By this time the shakeout in the PC industry is not news; fast-moving technologies and falling profit margins have taken their toll. However, some companies have managed to adapt very profitably to the changing market, and Acer America, the US subsidiary of the Taiwanese Acer Group, is a prime example. Starting on page 53, we look at the current state of Acer.

We also include several articles on products for Windows users, and in our Multimedia & Beyond section, visit the studio where *Bablyon 5*'s computer graphics are created on Amigas.

—*ME*

COVER STORY

ACER AMERICA:
Competitive Strategies For The Global PC Marketplace
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While many PC vendors, including some large multinational companies, have fallen on hard times lately, Acer America has grown and prospered. President Ronald Chwang discusses the strategies that led to this success and describes Acer's vision of the market's future.

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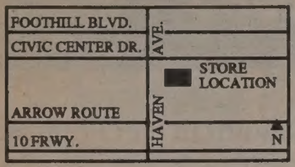

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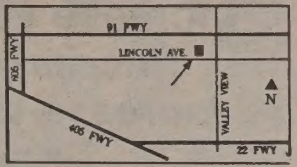

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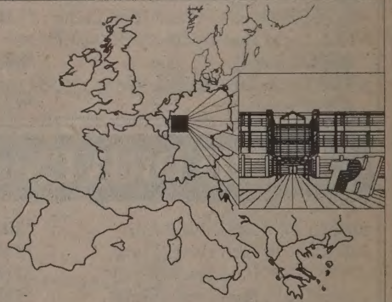

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INDUSTRY INSIGHT

Windows, DOS, NeXTSTEP, Pentium

BY PAUL HOFFMAN

MICROSOFT MAY LOSE TRADEMARK ON "WINDOWS"

The US Patents and Trademark Office has denied Microsoft's application for registered trademark on the name "Windows." According to the office (and to many people who were in the industry in 1983), the word was used generically to refer to programs that provided scrolling windows, and therefore lacked valid qualifications for trademark protection. Other companies, including Microsoft's competitor Borland, have applied to use the word "Windows" in the name of their products, and if Microsoft loses its expected appeal, there may be many different "Windows" packages on the market, with many different functions.

> *When it introduced the concept of the Windows operating environment in 1983, Microsoft was using generic-style names for its products, such as "Word" and "File," and "Windows" was considered to be a similarly generic name.*

Copyright © 1993 by Paul Hoffman. All rights reserved. Paul Hoffman is an industry analyst who has been covering microcomputer technology for ten years. He can be reached on Internet (phoffman @well) or CompuServe (71545,346). He also writes popular microcomputer books.

When Microsoft introduced the concept of the Windows operating environment in 1983, many programs had already been using the term, and many also used the same silly catchphrases (such as "we do windows") in conjunction with their products. At the time, Microsoft was using generic-style names for its products, such as "Word" and "File," and "Windows" was considered to be a similarly generic name.

Microsoft has six months to file a response to the Trademark Office, and can further appeal the decision if it is not changed. That appeal could take years, but many competitors may feel that they can use the term "Windows" with impunity before the case comes to trial. Given the high level of ill will that Microsoft has generated in the industry, it is likely that major competitors will try to weaken its grip on the operating system market by diluting the appeal of "Windows."

UTILITY-LOADED MS-DOS VERSION 6 DUE SHORTLY

Software vendors such as Symantec (Peter Norton) and Central Point have done so well in the past few years, Microsoft has joined the fray by including many utilities in its imminent release of MS-DOS v6.

Previously, if you wanted high-quality backup, anti-virus, and other utilities, you had to buy them from other vendors. With the new version of MS-DOS, Microsoft is forcing utility manufacturers to either come up with compelling improvements on the new bundled utilities or get out of the market.

The list of new or vastly improved features in v6 is long. Among the new utilities are:

•**Disk compression** that can effectively double the amount of data you can store on your hard disk. This feature, called DoubleSpace, will probably be the most useful feature to users who hadn't bought any utilities.

•**Backup** is never anyone's idea of a good time, but it is a necessity. Microsoft licensed Backup for MS-DOS, an easy-to-use program with good compression capabilities, and Backup for Windows from Symantec for basic backup. The Microsoft version does not back up to tape, however.

•**Anti-virus** utilities are very popular, and Microsoft licensed theirs from Central Point Software. The software is configurable so that new viruses can be detected as they are developed.

•**Startup interface** has always been terrible in MS-DOS. Although the CONFIG.SYS and AUTOEXEC.BAT files are still there, it is now much easier to have more than one setup. For example, you might want to load different programs if you boot knowing you are going to run Windows than if you are going to run a networked database manager. The new interface lets you choose the startup when you turn on the PC.

Some features exist in MS-DOS v5 but are greatly improved, such as:

•**Disk caching** can greatly speed up data access from the disk. The SmartDrive program is now much faster and can be tuned by power users to best respond to certain types of disk accesses, such as random database searches.

•**Memory management** has always been MS-DOS's weakest area, and companies such as Quarterdeck have grown by offering programs superior to Microsoft's anemic EMM386. The new version has an automatic optimizer that automatically arranges the order of software in memory to give you the most space, particularly if you are running Windows 3.1. It can also let older programs dynamically allocate memory so you don't need to waste memory on them.

•**Undeleting** files under v5 was clumsy at best, but the totally new version (licensed from Central Point Software) has better protection and a great Windows interface.

•**Computer diagnostics** have come of age with a vastly expanded MEM command, as well as official support for MSD, the system diagnostic program that tells you everything

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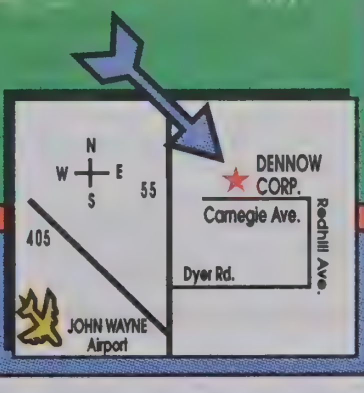

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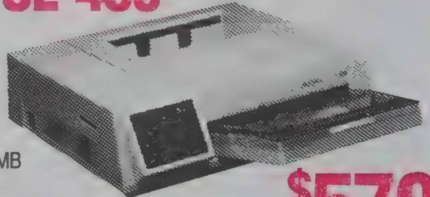

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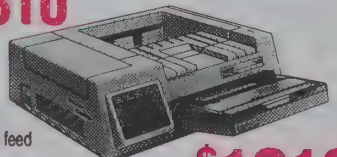

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Due to various circumstances, some features that were originally slated for MS-DOS v6 have been pulled. The package was originally meant to include software to link DOS PCs to Windows for Workgroups networks, and to allow easy exchange of electronic mail. However, Microsoft has been shocked by the extremely low sales of Windows for Workgroups due to the worries of corporate managers that the product will give their users too much flexibility. In response, Microsoft took out the client software from the beta-test copies of v6. Further, Microsoft also removed a small part of the disk compression software, probably in response to the Stac lawsuit reported in this column last month.

The number of utilities in v6 virtually assures Microsoft of a huge market for the product, regardless of how much it costs to upgrade. Within six months, at least half of the active MS-DOS users will probably have upgraded to v6, even if they already own the third-party utilities that are included in the package, just so they can say they've got the Microsoft-labeled features. Microsoft is already compiling a feature list for v7, thereby proving wrong the industry pundits who have for years been saying "DOS is dead."

> *The long-awaited chip was originally supposed to have shipped by now, but Intel has been plagued with production delays. The delay won't hurt Intel one bit, however, because it is making so much money on the 486 line.*

NEXT DUMPS HARDWARE BUSINESS, HOPES TO SAVE ITSELF IN SOFTWARE

After years of insisting that a big surge of buyers was just around the corner, NeXT Inc. admitted that it wasn't ever going to make money in the UNIX hardware business and dumped its line of computers and peripherals. Instead, NeXT will focus on NeXTSTEP software, a UNIX operating system with a very attractive user interface and built-in tools to make programming much faster than on traditional UNIX platforms. The move caused the company to lay off more than half of its remaining employees, and NeXT will probably sell its state-of-the-art manufacturing plant in Fremont to another hardware or software vendor.

NeXT started with a splash three years ago, promising to bring easy-to-use UNIX to the desks of the world with its custom hardware and software. Instead, it sold only fifty thousand systems and was never considered seriously. However, most analysts who evaluated the NeXT system were impressed with NeXTSTEP. By becoming an operating system company, NeXT will have to give up its pretensions of exclusivity and go head-to-head with giants such as Microsoft and Novell in the still-unproven PC workstation market.

NeXT is currently in the last phases of porting NeXTSTEP to the Intel processors, and expects to release it commercially in May on specific high-end hardware. NeXT has won support from PC companies such as Dell, NEC, AST, and Hewlett-Packard. While everyone has big hopes for Taligent and Cairo, future products from Apple/IBM and Mi-

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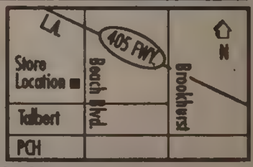

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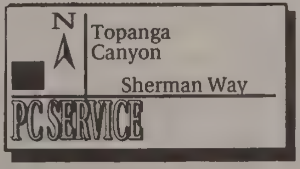

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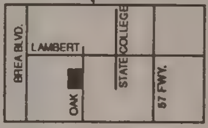

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crosoft, NeXT hopes to capitalize on having a solid, proven (to a small extent), friendly client/server environment available soon. Since no one expects Taligent or Microsoft to have a real product for two years, NeXT may have a distinct advantage.

NeXTSTEP for the PC will be introduced at the (probably last) NeXTWORLD Expo at the end of May. That show may be the last time current NeXT hardware users can get together, and they will undoubtedly have to endure more posturing from Steve Jobs about how he knew all along that this was the best move for NeXT. Jobs has assured current NeXT users that all the programs they've written for the NeXT machine will be easily portable to NeXTSTEP running on PCs, so there may be a silver lining to the announcement that they can no longer buy NeXT systems to go with their current ones.

For NeXT to be successful in the new market, it will have to convince businesses that developing programs in NeXTSTEP is so much faster than current technology that it's worth their investment. Although "object-oriented technology" has become a very popular phrase in the computer industry, far fewer companies have committed to it than was expected a few years ago. To those companies which are committed to it, NeXTSTEP will be attractive for particular groups.

Although NeXT lost a huge amount of money over the past few years on its hardware manufacturing, it could conceivably recoup its losses by having started early in the software side. Then again, NeXTSTEP could be another boondoggle dragged down by the same bad management that kept the NeXT hardware system alive years longer than it should have.

INTEL DELAYS RELEASE OF PENTIUM CPU

In a move that will certainly raise the price of mid- and high-end PCs, Intel has further delayed the introduction of the Pentium CPU until the end of May. The long-awaited chip was originally supposed to have shipped by now, but Intel has been plagued with production delays. The delay won't hurt Intel one bit, however, because it is making so much money on the 486 line. In fact, some companies have suggested that Intel is purposely delaying the introduction of the Pentium to milk the maximum profits from PC buyers who choose the 486.

Intel did not disclose the reasons for the delay, but companies that have preproduction samples of the chip believe the delay is mostly due to heat dissipation problems on the chip. Pentium will be the hottest-running chip commonly available, and PC manufacturers are having to design more efficient air circulation systems for the Pentium computers. The currently prevalent design has the CPU under the hard drive, where air circulation is minimal and there is extra heat from the drive itself. Either the chip will need significant cooling attachments, the system will need a more powerful fan, or both.

The delay will also help Intel appear more honest about its speed claims for Pentium. Software companies have advised Intel to be careful about saying how much faster programs will run on a Pentium CPU if they haven't been optimized. In contrast to Intel's early statements, some software companies are saying that programs that are not optimized for Pentium may not get any speed increase over current 486 CPUs. If this is true, it could certainly hurt initial sales of Pentium systems. Intel hopes that all major software vendors recompile their programs in the next few months, and has even offered them free public relations at the main Pentium announcement if they do.

Others have pointed out that Intel wants lots of Pentium systems available at the announcement, and that large customers like IBM are insisting on having more chips available before they announce their systems. In order to make more CPUs available for PCs, Intel has delayed the manufacturing of the Pentium Overdrive chips until 1994, much to the consternation of companies like DEC who have been putting Overdrive sockets on their systems for almost a year. Intel looks on the Overdrive market as much less important than the basic CPU market, and may even decide to push the Pentium Overdrive further out than a year from now. In the interim, Intel is expected to come out with a 99MHz 80486DX3 that may run almost as fast as Pentium for programs that have not been recompiled. ■

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The criminal charge is almost unprecedented in the software industry, and the result may change the way that companies hire top managers from their competitors. Further, it could also change the way in which people use electronic mail, since much of the initial evidence in the criminal case comes from electronic mail sent between the two defendants while Wang was still an employee at Borland. It is widely expected that the defendants will try to suppress that evidence based on federal laws concerning use of electronic mail [see Mitch Kapor's "Computer Spies," Issue #106, for further discussion on this matter—eds.]

Continued on page 159

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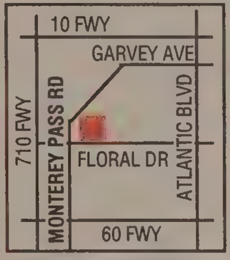

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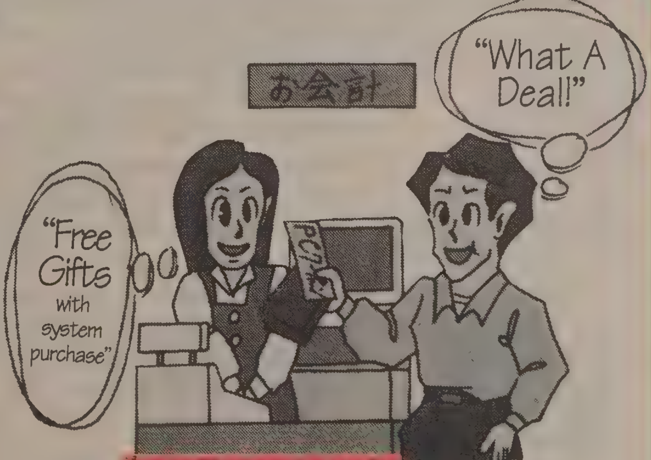
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Do You Know Where Your Futures Are?

BY JIM WARREN

REALIZABLE FANTASIES

These columns concern the realistic near future, and how we can direct it—if we *work* on it. This particular column offers vague generalities followed by action specifics.

THE FUTURE IS LIKE THE PAST—ONLY BETTER

In the 1890s, the Industrial Revolution was well under way, and excited technoids eagerly tinkered with mysterious, cantankerous, malfunctioning, ill-designed, hard-to-steer horseless carriages. Most folks didn't know how to use them; many were suspicious of them; some feared them. Some still do; the vehicularly impaired are still with us.

Naive lawmakers passed numerous *bizarre* laws to control these dangerous machines. Many horse sheriffs had difficulty dealing with criminals who began using these "high tech" machines for "innovative" crime, until the cops came up to speed in the new technology.

Gas buggies' "obvious" benefit to society was that they would pull wagons at speeds several times faster than even the fastest horse—*Wow!* In fact, their dominant impact has been to allow people to live far distant from their work, creating the unpredicted suburbs—and air pollution, day trips to Yosemite, asphalt open space, miles-long traffic jams, radar revenues, etc. [Noted by Nobel laureate Herbert Simon.]

This new transportation technology created great benefits, newfound freedoms, expanded work and lifestyle alternatives—and numerous unintended consequences, including a rash of oppressive monopolies, political graft, and government giveaways to the rich and the powerful.

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HORSELESS CARRIAGES OF THE 21ST CENTURY

In the 1990s, the Information Age is well under way, and excited technoids are again eagerly tinkering with mysterious, cantankerous, malfunctioning, ill-designed, hard-to-steer information machines that run over local, national, and global data highways. Most folks still don't know how to use them; many remain suspicious of them; some continue to fear them. And it is predictable that some folks will remain computer-impaired for the rest of their lives.

Often-naive lawmakers are passing well-meaning legislation to control real and fantasized computer threats, continuing to illustrate the Law of Unintended Consequences. Law enforcement is again having temporary difficulty with "high tech" crime—which, in a few years, will seem no more innovative than using a car to get away from a bank robbery.

This new "transportation" technology (transporting information and communication globally) is already creating newfound freedoms, expanded work and lifestyle alternatives, and beneficial decision-making tools. It is also beginning to generate its share of oppressive monopolies, political graft (now politely called "lobbying"), and new government giveaways to the rich and the powerful.

It might appear that nothing's changed. But it has!

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False information can be quickly refuted; propaganda promptly balanced; expertise and experience, which each of us has, can be quickly sought and easily shared.

A watered-down "GPO Access" bill, HR5983, was written with "considerable input from the commercial data vendors, through the Information Industry Association (IIA)." The new bill restricts GPO authority to only those public records volunteered by their originating agency, plus those normally published by the GPO—a small subset of computerized federal public records.

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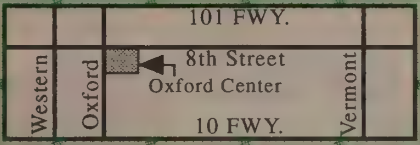

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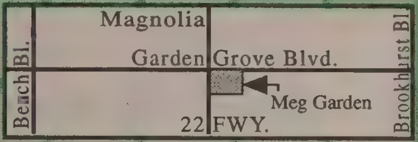

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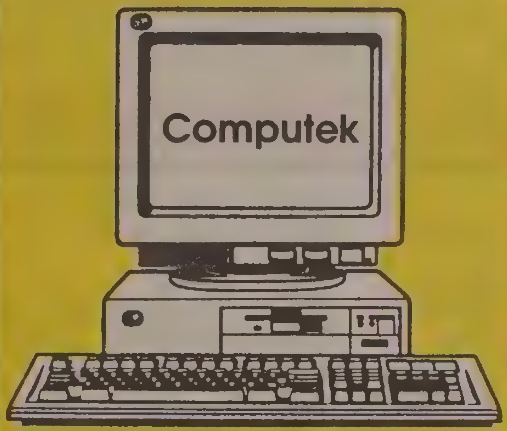

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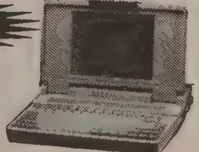

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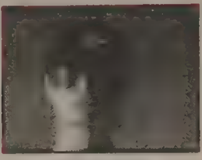

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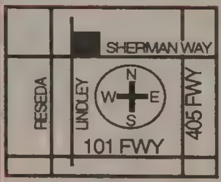

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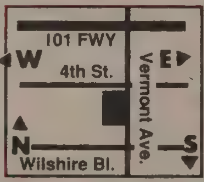

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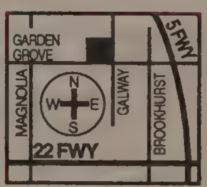

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CONGRESS IS GUTTING PUBLIC-ACCESS LEGISLATION

This information blitzed across the Internet, a few days before our press deadline, from James Love, director of the Ralph Nader group's Taxpayer Asset Project.

The federal government is the largest collector of public information, and is rapidly computerizing most of it. Last years, the WINDO (HR2772) and Gateway-to-Government (S2813 by then-Senator Al Gore) bills would have initiated one-stop online access to federal databases through the GPO (Government Printing Office; "printing"—a quaint term!). Distribution would have been free to the nation's fourteen hundred libraries that serve as depositories for government documents in each congressional district, and would have been low-cost for home and business users.

Notably, last year's bills would have limited user fees to the "incremental cost of dissemination of the information." Presently, many federal—and state—agencies generate substantial profit from their computerized data products and services, e.g. the NTIS (National Technical Information Service).

BELTWAY BANDITS ATTACK THE CITIZEN'S INFORMATION CARAVAN

Instead of continuing WINDO/Gateways in this Congress, a watered-down "GPO Access" bill is taking their place, modeled after last year's HR5983. Love reports that HR5983 was written with "considerable input from the commercial data vendors, through the Information Industry Association (IIA)."

Funding is understandably one of the issues—but a tiny tidbit of printing funds could be redirected to underwriting this paperless, pollutionless alternative. E.g., Gore's old bill would have provided $13 million over two years—peanuts in Washington terms. (E.g., what's the fully encumbered cost for a single military band for two years?)

The new bill restricts GPO authority to only those public records volunteered by their originating agency, plus those normally published by the GPO—a small subset of computerized federal public records. It also removes last year's authority for the GPO to reimburse agencies for agency expenses in providing electronic data through the GPO.

And the new bill *certainly* doesn't require nationwide, low-cost access to the Federal Elections Commission's (FEC) online database of campaign contributions, nor to the House's LEGIS system that gives its Inside-the-Beltway users online access to the full text of all bills before Congress. More properly titled, "GPO Access Repression," this bill is degraded in still other ways from the 1992 bills. So far, the Clinton/Gore administration seems to have had little input to these undesirable revisions.

The excuse is money. The reality is pressure from the Beltway lobbyists—agency profiteers and high-markup information purveyors.

PARTICIPATE IN YOUR GOVERNMENT IN ACTION

Direct comments and information requests to: Sen. Wendell Ford (D) and Sen. Ted Stevens (R), Senate Committee on Rules and Administration, (202)224-6352; Rep. Charlie Rose (D) and Rep. Bill Thomas (R), House Committee on House Administration, (202)225-2061; and James Love, Taxpayer Assets Project, 12 Church Rd., Ardmore, PA 19003, (215)658-0880. Email: *love@essential.org.*

SPEAKING OF COMPUTERS AND SOCIETY

The author often speaks and lectures about technology, government, freedom, and privacy, and also about personal computing's history and futures. In April, he will be chairing a session on "Cryptography: Technology and Policy Issues" at the IEEE Computer Society's Asilomar Microcomputer Workshop, and will join the Electronic Frontier Foundation's Washington Counsel, Shari Steele, in giving a half-day seminar on these issues at the High Tech Criminal Investigators Association (HTCIA) spring workshop. Contact your professional organizations for details, if you work in law enforcement or computing. ■

Warren founded InfoWorld, *Wireless Digital Initiative, Inc., and one of the nation's largest public microcomputer conventions. He was founding host of PBS's* Computer Chronicles, *founding editor of* Dr. Dobb's Journal, *and has chaired various trade and professionals' organizations. He holds graduate degrees in computing (Stanford), medical information science (UC Medical Center), and mathematics & statistics. He has been a computer professional since 1968, and was a mathematics teacher and professor for ten years before that.*

He organized and chaired the landmark First Conference on Computers, Freedom & Privacy (1991), sponsored by a dozen nonprofit civic, professional, and industry organizations, and received one of the first Electronic Frontier Foundation Pioneer Awards (1992). He is a member of the board of directors of Autodesk, Inc., and also chairs the Communications Committee of the California Public Records Act Reform Coalition.

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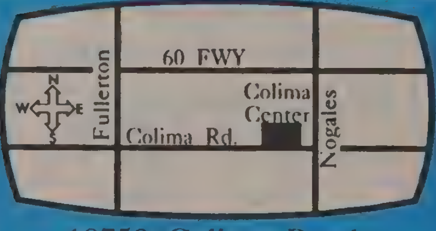

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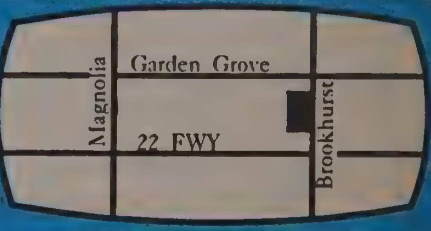

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From The Frontier

Software Felonies

BY MITCHELL KAPOR

It doesn't take much to persuade Congress to jack up the penalties for white-collar crime, and last fall's amendments to the Copyright Act were no exception. With a little prodding from the Software Publishers Association, legislators made a felony of possession of ten unauthorized copies of a program, collectively valued at as little as $2500. The new law is a powerful bargaining chip for an industry that has learned to enforce its property rights through intimidation. A little too powerful, I'll wager. Under the new law, just about any computer department manager could be charged as a felon.

A NEW BIMONTHLY COLUMN

There's no doubt that software companies need help enforcing their property rights against brazen counterfeiting schemes, as a recent action brought by Microsoft shows. Its civil suit against Taiwanese defendants alleges that hundreds of thousands of counterfeit copies of the MS-DOS operating system were sold to unsuspecting customers. Armed with seizure orders, attorneys for Microsoft staged elaborate raids on secret warehouses in southern California, carting off truckloads of contraband. Use of the new criminal provisions of the copyright law makes sense in an extreme situation such as this.

But should it be a felony to make ten unauthorized copies of a program? In public speeches on this topic, I routinely ask members of the audience how many of them will stand up to declare they have no unauthorized copies on their hard disks. Only a tiny minority will do so. This suggests to me that, under the new law, any manager with a handful or more of employees could be prosecuted and sent to jail.

Software producers, of course, have to protect themselves against more than the counterfeiters. The software association estimates that its members lose between $1 billion and $2 billion a year in revenue from customers who buy fewer copies of business software than they should.

At Lotus, we tried to solve this problem by adopting technical measures to restrict the copying of files. As I learned to my chagrin, this approach had the unacceptable consequence of also restricting legitimate uses by paying customers. Nowadays very few software producers use copy protection devices. They're too likely to be broken by serious hackers and too likely to alienate innocent users. As a simple technical matter, there is no barrier today to anyone walking off with a $500 product in a shirt pocket, or to a corporate software customer that wants to use more copies than it is willing to pay for.

But the solution to this problem is not a rigid prohibition on copying. Even in the overwhelming majority of honest companies, including many with stringent internal policies, employees routinely make copies of their applications for use on portable and home computers, temporary copies for a coworker, multiple backup copies, and the like. Unauthorized copies proliferate. Careful lines must be drawn, dividing software duplication into three different grades of behavior: totally innocent copying, unfair use that might give rise to a lawsuit, and criminal piracy. The new anti-piracy law fails to make these distinctions.

The software association claims it has no intention to use the criminal law to enforce essentially civil claims against customers who make and use multiple copies. "I don't need to call the FBI to beat on corporations," says Ken Wasch, the association's executive director. "There's absolutely no intention of criminalizing the inadvertent copier in a corporation. We have a very adequate civil remedy." By its own accounting, Wasch's group has done very well in civil court.

Nonetheless, with these stiff new provisions in place, I can't imagine that sooner or later the felony criminal provisions won't be used, in practice or as threat, against less than obviously flagrant violators. Here's one scenario: The software association will knock politely and ask to review XYZ Corp.'s computers for illegal copies. If XYZ refuses to allow the audit, the enforcers can now do more than file a civil action. They can threaten to call in the Department of Justice for a criminal investigation.

This law is simply prone to abuse. It won't stop piracy, nor will it contribute to a new ethic that respects the hard work and research dollars put into application software.

Software vendors could take one step in the right direction by rewriting their license agreements to be more realistic. Most licenses don't permit a user to install the same copy of a product twice under any circumstances, except to make a backup. However, a few companies permit customers to make multiple installations of a single copy of software as long as only one copy is in use at any time.

> **With more executives using a desktop computer in the office and a notebook computer on the road, broadening the terms of acceptable use just represents common sense. It would also go a long way to ease tensions with customers who find themselves uncomfortable at the prospect of being branded as felons.**

With more executives using a desktop computer in the office and a notebook computer on the road, broadening the terms of acceptable use just represents common sense. It would also go a long way to ease tensions with customers who find themselves uncomfortable at the prospect of being branded as felons.

We live in a difficult era in which, as Stewart Brand puts it, information wants to be free, yet it also wants to be expensive. Until both vendors and users sincerely acknowledge this paradox, efforts to reduce piracy are likely to do as much to foster conflict and discomfort for legitimate users as they do to benefit software producers. ■

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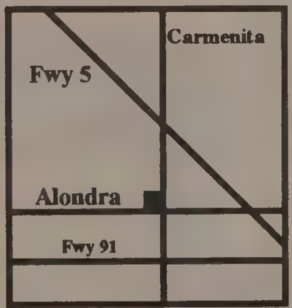

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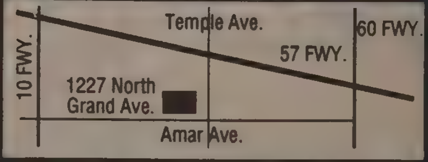

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PIX-100 Suggests Interesting Possibilities

BY MITSU HADEISHI

PENS AND PALMTOPS

The words "handheld computing" and "multimedia" are rarely used in the same sentence with one another, but the $1000 Sony PIX-100 Multimedia CD-ROM Player has changed all that.

A compact unit intended for fully portable use, the PIX-100 can also be hooked to a stereo system or headphones; it has NTSC video output for connection to color television sets equipped with a video input jack. At 7 1/8" x 5 7/8" x 2", it is larger than the Sony Data Discman family (see below), but offers far greater functonality than its smaller cousins. Capable of playing full-sized 5 1/4" CD-ROMs, the PIX-100 can display color graphics (when hooked to an external monitor—the built-in screen is greyscale) and play stereo sound, and therefore provides much more presentation pizzazz.

At first glance, the unit seems somewhat unimpressive; if you've encountered one at your local stereo store, you may have been disappointed with the low quality of its video and audio. The built-in speaker produces rather tinny monaural sound; the greyscale display, though sharp and clear, only has a resolution of 320 x 200 (with seven levels of gray), and the images sometimes seem a bit grainy and diffuse.

What is not apparent at first glance is that the sound quality dramatically improves when you use the headphone jack: suddenly the unit is outputting high-quality digital audio, which improves the overall experience considerably. And when viewed on a large-screen television, the graphics, though still somewhat grainy, appear in color (up to 256 colors) and are more readable than on the built-in greyscale display. In addition, the unit doubles as an excellent portable CD player, with a very reliable mechanism.

The PIX-100 also displays the usual high-quality Sony ergonomic design. After playing with the unit for several hours, going through the two bundled Multimedia CD-ROMs (the user manual is included on a CD-ROM as well), I came away much more impressed with the potential, if not yet the current reality, of this technology.

The machine comes with a sample Multimedia CD-ROM (CD-ROMs compatible with this Sony player all bear the MMCD logo, and are all in the CD-ROM XA format), the IBM-produced "Roger Dawson's Secrets of Power Negotiating." Also included is a coupon good for one of three other CD-ROMs: Random House Audio Books Plus' "The Civil War," Compton's NewMedia "Let's Go: 1993 Budget Guide to the USA," or the "Let's Go: 1993 Budget Guide to Europe." In addition, there is a coupon for the first "issue" of the first multimedia newsmagazine: "NEWSWEEK Interactive."

Other discs available now, or scheduled to be released over the next year in the CD-ROM XA (MMCD) format, include a series of business productivity titles. There's also travel information, including Japanese language tutorials; the "At Its Best" series of travel guides; the OAG Air Travel and Hotel Guide; the Herald Tribune "Guide to Business Travel in Europe"; the Zagat-Axxis CityGuide (including detailed maps for most major United States cities, plus full text and more from the Zagat Survey restaurant and hotel guides); the "Wall Street Journal Guides to Business Travel in the USA and Canada"; three of the multimedia versions of the famous "Let's Go" series of travel guides (the European version also includes the Soviet Union and the Baltic States). Business reference works include a work on environmental protection; management guides; real estate, financial, and other desk references; various executive training works; dictionaries, thesauruses, grammar, and style guides; a variety of health reference works; a Berlitz Spanish Language tutorial; Compton's Interactive Encyclopedia; Compton's "Electronic Home Library" (a collection of "classic" works including the text of over 250 volumes of fiction and nonfiction); a movie guide; a cookbook; some historical guides; and miscellaneous other titles.

Some of these titles are not scheduled for release until the end of this year; some of the more intriguing products, for example the Zagat-Axxis city guides and electronic map book, are not slated for release until November. However, quite a few of them are available now, including the Let's Go guides, the Compton's Encyclopedia, the video guidebook, and a number of the business reference guides.

> **What is not apparent at first glance is that the sound quality dramatically improves when you use the headphone jack: suddenly the unit is outputting high-quality digital audio, which improves the overall experience considerably.**

From a technical standpoint, the PIX-100 is fairly simple: It comes with a V20HL, a CMOS 8088-compatible CPU running at 9.55MHz.

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RESOURCES:

Dauphin 5000 Convertible Pentop and DTR-1
Dauphin Technology, Inc.
(708)971-3400

Pen-based applications
Notable Technologies, Inc.
1065 E. Hillsdale Blvd., Ste. 111
Foster City, CA 94404
(415)208-4400

Sony PIX-100 Multimedia CD-ROM Player
Sony Corporation
(201)930-SONY
1-800-222-SONY

TeleScript and MagicCAP
General Magic
(415)965-0400

The system RAM is 1MB; also included is 256K of non-volatile memory (for use by various multimedia applications to store bookmarks and the like), and 512K of system ROM. The machine includes a QWERTY keyboard, a numeric keypad, five function keys (variable according to the application being used), and a four-directional cursor keypad with two control buttons (marked "Yes" and "No"). In practice, you almost never use the QWERTY keypad or numeric keypad; most of the time you're just using the cursor keys and the "Yes"/"No" buttons.

Each CD-ROM is capable of storing up to 600MB of data; this amounts to, of course, up to three hundred thousand pages of text information. Using lower fidelity playback modes, you can get up to sixteen hours of voice-quality digital audio on one multimedia CD, or up to roughly forty thousand full-screen compressed images at 256 colors per image. The CDs are in the CD-ROM XA format, an industry standard spearheaded by Sony, but used by many other manufacturers.

THE POWER OF THE PENCIL

The interactive portion of the included CD-ROM "Power Negotiating" was a bit, well, unimpressive. It covered the material very briefly and fairly superfically. The presentation produces a feeling reminiscent of the way you used to feel during the "audio-visual" presentations in elementary school: narrated slide shows that teachers might use on a lazy afternoon. It has a rushed quality, suggesting that the producers of the CD-ROM were not able to finish the product in time, and just cut out features in order to ship it.

In some regards, opportunities to take advantage of the interactive possibilities were lost. A quiz section consisted of just a number of text files you could scroll through with questions (and the answers at the end) on them; they didn't even bother to try to make the quizzes interactive, for example, by letting you enter your answers, then get a score and a commentary on each question and answer. No, instead, they tell you "get a pencil and paper ready" and write down the answers on a piece of paper.

Pencil and paper? With a $1000 piece of technology sitting in front of me, I don't want to have to drag out a pencil and a piece of paper. Of course, this is not a failing with the entire concept of multimedia, just this particular title.

In addition to this, the presentations used a relatively simple user interface (pushing buttons), and did not really take advantage of the full potential of intelligent random access one could imagine being possible with this machine (other titles, for example those produced by Compton's NewMedia, are reputed to have much better searching and indexing features).

However, in addition to the interactive "multimedia" part of the presentation, there was also the entire collection of the cassette tapes from which this multimedia title was originally derived, and though this was in audio-only format, it comprised something like six hours of audio (by contrast, I was able to quickly get through the entire "multimedia" portion of the CD-ROM title in little more than an hour or so). It's rather remarkable to have an entire cassette collection stored on one CD-ROM.

Despite, and perhaps partially because of, the failings of this particular title, it does whet one's appetite for more. In addition, there is just something remarkable about being able to "play" the user manual for a machine on the machine itself.

In addition, the list of current and future titles for this machine looks potentially interesting; in particular, being able to have the entire Zagat-Axxis database of major US cities on one CD-ROM is impressive. I note the understandable but unfortunate lack of any games for this little unit, however.

Of course, at $1000 this machine is currently a bit pricey; however, this is just the first in what will be a long series of products from Sony and other companies that take advantage of the idea of portable multimedia CD-ROM players.

MORE ABOUT MAGIC

What is General Magic all about? Last month I mentioned that General Magic had announced its TeleScript communications protocol, an interoperable standard that will allow portable communicators produced by many different companies to exchange their information seamlessly. Since then I've learned a bit more about TeleScript.

In addition to the transparent multi-vendor interoperability of the protocol, TeleScript also supports what is called "intelligent messaging," allowing personalized information retrieval. Also, TeleScript supports transmission of graphics, sound, and animation as text. AT&T will provide a TeleScript-based networking system for use by the various vendors that produce portable communicators.

PEN NEWS

•**Notable Technologies, Inc.** has announced a number of pen-based applications, including Pencrush, a $99 data compression utility for pen-based computers; MobileAccess, now in final beta (intended for shipment early this year), a $195 telecommunications and data transfer package that links mobile, portable computers with a number of different host environments via a terminal emulator; Shared Whiteboard, a $99 real-time simultaneous graphical document editor that allows multiple users the ability to create and annotate a document at the same time, with pen strokes and images being transmitted from one unit to the other in real time; and Pencross, a $49.95 pen-based crossword puzzle game. ■

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Timbuktu For Mac & Windows

Cross-Platform Connectivity

BY LENNY BAILES

Farallon's Timbuktu 5.01 for the Macintosh allows for a new level of cross-platform connectivity when combined with the new Timbuktu for Windows. The software lets Windows users share network laser printers with Mac users, and provides peer-to-peer file exchange and cross-platform application support. Files may be exchanged across the network without using a dedicated server, and Mac and PC users may work together on projects in real time.

For years, users have wanted to connect Macs and PCs and get them to run each other's software. Although Insignia's Soft PC can emulate the MS-DOS operating system on a Macintosh, it is sluggish and temperamental. Farallon's twin Timbuktus allow file sharing, screen sharing, and remote control access.

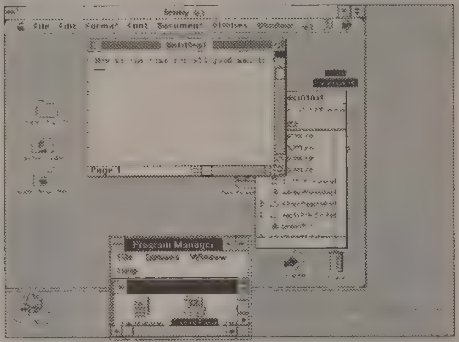
At AppleTalk speeds, running Windows remotely on the Mac is a bit sluggish for standalone productivity, but the screen and file sharing features are robust enough to be useful. Desktop publishers may readily exchange files through Timbuktu while PageMaker or Quark XPress remains open and active locally.

The remote control feature may be useful as a means for a supervisor to inspect or revise work done by colleagues logged into the network. You can also use the remote control feature for instructional purposes. A trainer may walk through the steps involved in setting up a spreadsheet or formatting a document, while the trainee observes. For instance, after a demonstration on how to wrap text around a graphic image, the trainee may repeat the lesson while the trainer observes.

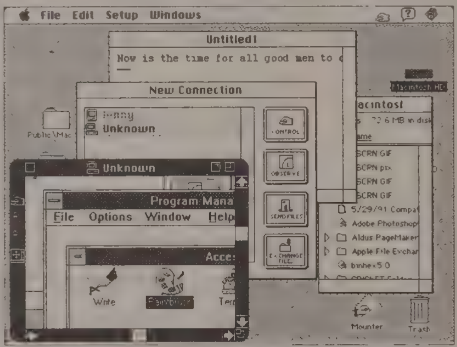
With a faster network than AppleTalk, the attractiveness of the remote control feature is enhanced. Ethernet and Token Ring networks can be used as a pathway to LocalTalk devices. Remote control does work under LocalTalk, but is only slightly faster than dialing into a machine via modem.

SETUP

Timbuktu makes use of Mac System 7's built-in networking to assign hierarchical user privileges. (Two Windows machines running individually licensed copies of Timbuktu may also use the hierarchical access feature to connect to one another.) Timbuktu allows users five privilege options: Exchange files/copy to, exchange files/copy from, exchange files/remove, observe, and control. In addition to a master password to access a remote machine, individual users may be assigned passwords and access privileges in any of the five categories. You may set up one-way or bidirectional user access.



System 7 running on a PC in an MS Windows window.



Now is the time for all good men to

Windows running in a window on the Mac.

MS-DOS machines may share an AppleTalk printer outside of Windows through Farallon's underlying Phonenet software or through Windows Timbuktu's version of "The Chooser." Macintosh users may access a printer connected to a DOS machine through Windows, using Windows applications.

Setting up Timbuktu on a Mac running System 7 is a transparent process. Once it is installed, all you need to do is go into the standard Apple Control Panel to enable file sharing as you would with any LocalTalk network. Timbuktu for the Mac installs itself as a desk accessory. No additional hardware is necessary on the Mac side, although a faster, Ethernet card may greatly speed up performance.

Setting up Timbuktu on the MS-DOS machine is a transparent process, provided you have a compatible PC. I discovered that the PhoneNet II card provided with Timbuktu for Windows would not perform correctly when I attempted to place it in a 33MHz, 486DX machine. When the card was inserted into another machine (a 40MHz 386DX) there were no problems. The installation from disk was routine, and connection to a Mac IIci was established as soon as I plugged in the cable.

PERFORMANCE

Timbuktu for Windows sits on top of Farallon's PhoneNet software. The first thing I did after the connection was established was to enable "Guest access" and log into the Mac. I opened MS Word remotely and found performance only slightly sluggish. It would actually be possible to prepare a document remotely, although the process would be akin to running Word for Windows on a slower 286 or 16MHz 386SX. When I ran over to the Mac side to access Windows I found that performance in Windows Write and Word for Windows was below the speed threshold at which I can work comfortably. Perhaps on a Powerbook or a Quadra the situation would be different.

Although the cross-platform remote control feature is heuristically the most interesting feature of Timbuktu, the support for file and screen sharing would be the factor I'd consider most in deciding whether to buy it. The package is configured to do "smart transfers," recognizing files from applications that run on both platforms and automatically appending the correct filetype and creator. The ability to remove and add directories and folders recommends Timbuktu for system administrative work. The package also has the ability to dump the current screen to either the Mac or the Windows clipboard, recommending it in situations where desktop publishing or multimedia is done on both platforms. ■

RESOURCES:

Timbuktu for Mac/ Timbuktu for Windows, $199
Farallon Phonenet II Card, $199
Farallon Computing, Inc.
2470 Mariner Square Loop
Alameda, CA 94501
(510)814-5100

Minimum configuration for PC: Windows 3.0a or higher with DOS 3.1 or higher, 80286 CPU, 3MB of RAM (4MB for Enhanced Mode), 1MB of hard disk space. One serialized copy of Timbuktu required per node. Minimum configuration for Mac: Macintosh + or better, System 6.05 or better, 2MB of RAM. One serialized copy of Timbuktu required per node.

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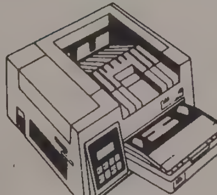

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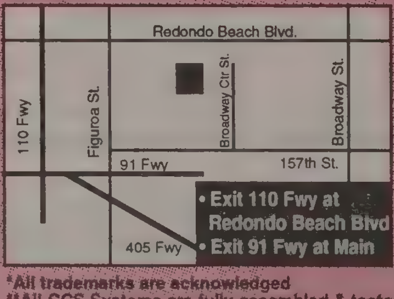

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New Printers To Help You Go Everywhere!

The Hewlett-Packard DeskJet Portable And The Canon Bubble Jet BJ-200 Are Designed To Meet The Demands Of Portable Computing

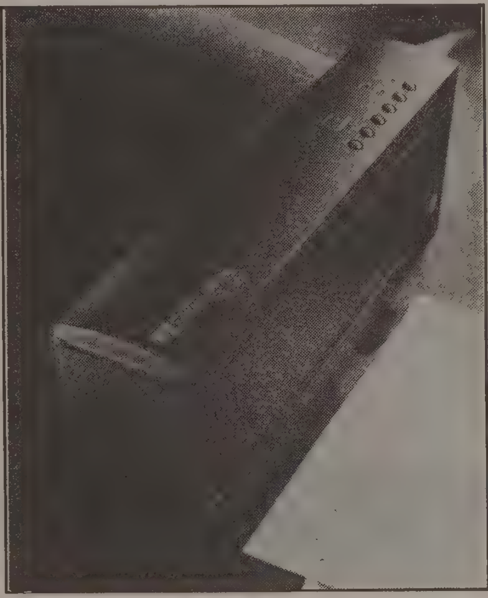
BY ED KAHN

RESOURCES:

Canon BJ-200 Printer, $549
Canon Computer Systems, Inc.
123 E. Paularino Ave.
PO Box 5048
Costa Mesa, CA
92628-5048
1-800-848-4123

Hewlett-Packard DeskJet Portable, $599
Hewlett-Packard Co.
Direct Marketing Organization
PO Box 58059,
MS511L-SJ
Santa Clara, CA
95051-8059
1-800-752-0900

Not long ago, finding a good quality printer that was both portable and affordable was nearly impossible. Over the last year, the availability of printers that meet these criteria has provided a major advance for users of laptops and other portable computers. A couple of months ago, I favorably reviewed a Coronajet. There are now two other printers that deserve attention.



The HP Deskjet Portable printer from Hewlett-Packard

Hewlett-Packard made history with their DeskJet series of printers. This was the first printer to offer laser quality with neither laser technology nor the price tag that goes with it. Since its introduction, the prices have come down and the number of models has expanded. You can get the basic DeskJet as either a color or black ink unit. Hewlett-Packard has added the DeskJet Portable to this family of fine printers.

The Portable fills a void—it offers the same quality as the larger DeskJet models, but weighs only 4.4lbs., without the optional cut sheet feeder ($99). This printer can be battery operated; printing one hundred pages before the Nickel cadmium battery ($99) needs recharging. The AC power supply, which will also recharge the battery, comes standard. Hewlett-Packard has gone to great length to make sure this printer will *really* work as a battery-operated unit by building in comprehensive power saving features. If the printer is out of use for more than two minutes, it enters sleep mode. It wakes up as soon as there is any action either on the control panel or from the computer. After thirty minutes of inactivity, the printer powers down completely. Another sophisticated feature is a fuel gauge that will let you know how much charge remains so you can be sure that you will be able to finish any printing job before power runs out.

In its basic configuration, you must insert pages individually. If your printing needs often include multiple page documents, I suggest using the cut sheet feeder. It adds 3lbs., but will accommodate up to fifty sheets of paper. Everything fits together nicely.

This printer really does offer laser quality output, but is a bit slower than either a true laser printer or its bigger, ink jet brothers. In draft mode, the output is about three pages per minute and in letter quality mode the output drops to about two pages a minute. The features on this printer are too numerous to mention, but you should know that it works perfectly in both a DOS and Windows environment. The only serious fault I can find with the HP DeskJet Portable is that it will not accommodate envelopes. Although many users will not find this a serious drawback, I felt limited by this.

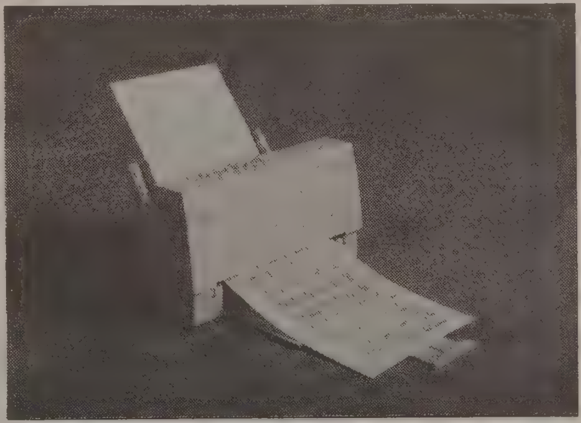
A carrying case ($99) that holds both the printer and a portable computer is available. The documentation is excellent and one of its highlights is that basic terms like font, typeface, style, point size, pitch, kerning, and other common terms are clearly explained.

If you don't have a need to use batteries, another new printer to consider is the Canon Bubble Jet BJ-200. This unit weighs 6.6lbs. and measures 13.7" x 7.6" x 6.8". The printer includes a built-in cut sheet feeder that holds about one hundred sheets of paper. The BJ-200 offers laser quality output with a resolution of 360 x 360dpi. Print output is roughly four pages-per-minute, which rivals many low-end laser printers.

While the Canon unit will work with MS-DOS applications, it really shines in a Windows environment. It comes with a driver that can be installed into Windows and thereafter works with any of the applications you use. If you are working in a DOS application, you can use either Canon or Epson mode. This lets a wide variety of printer drivers work with the BJ-200.

One of the nice features of the Canon BJ-200 printer is that it will print envelopes. You can stack up to ten business size envelopes in the cut sheet feeder. This printer accommodates only one size envelope, but this is sufficient for most business needs.

Documentation is excellent and the Canon provides a two-year warranty. The ink cartridge is made by Canon and retails for $25.



The Cannon BJ-200 Personal Printer

While not completely waterproof, print holds up as well as any of the other ink jet printers. Canon has made a significant advancement with this unit and I highly recommend it for users who are looking for a compact machine with high-quality output. If you do not need either battery operation or true laser technology, this is certainly a machine to consider. It should make quite an impact on the market as it has the features and price point many people are looking for. ■

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INTEL DX-50MHz	$1325	$1275
INTEL DX2-50MHz	$1275	$1235
INTEL DX-33MHz	$1160	$1120

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- 256 KB Cache RAM
- *170MB 14ms IDE HDD*
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- Optional Monitors

80486 EISA LB Systems
(Made in the USA)

	Regular	Cash
Intel DX2-66MHz	$1950	$1860
Intel DX-33MHz	$1685	$1625

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- 32 Bit True Color SVGA Card w/1MB
- 250MB 14ms IDE Hard Disk Drive
- Mini Tower Case w/2nd Cooling Fan
- 2 Serial/1 Parallel/1 Game Port
- 104 Key Programmable Keyboard

80386 ISA Bus Systems

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AMD SX-40MHz	$735	$710

- ISA MB w/128KB Cache
- 4MB 70ns System RAM
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- 16 Bit SVGA Card w/1MB
- 85MB 16ms IDE Hard Disk Drive
- Mini Tower Case w/200W PS
- 2 Serial/1 Parallel/1 Game Port
- 101 Key Keyboard

Monitors

Viewsonic 7 17" 1280 x 1024 VESA, LR, FS	$975
Viewsonic 6FS 15" 1280 X 1024 VESA, LR, FS	$575
MAG15F 15" 1280 X 1024 VESA, LR, FS	$595
CTX1560 15" 1280 X 1024 VESA, LR, FS	$465
MGC1506 15" 1280 X 1024 VESA, FS	$425
Viewsonic 5E 14" 1280 X 1024 NI VESA	$395
Viewsonic 6E 14" 1024 X 768 NI	$330
CTX5468NI 14" 1024 X 768 NI, VESA	$295
MGC1406 14" 1024 X 768 NI, VESA	$315
CTX5468 14" 1024 X 768 Interlaced .28mm	$265
MGC1439 14" 1024 X 768 Interlaced .39mm	$225

VESA LB Upgrades
(Add Prices to the Above Systems' Configuration)

Orchid Weitek P9000 Graphics Engine VL32 2MB VRAM + 1MB DRAM, Winmark 50	$350
ATI Ultra Graphics Plus Pro VL w/2MB VRAM	$350
Orchid Fahrenheit VLB SVGA w/1MB RAM	$125
Diamond Stealth VLB SVGA w/1MB RAM	$155
Actix S3805 Graphics Engine SVGA VL32 1MB RAM on Board, Upgradable to 2MB, Made in USA	$105
ET4000 SVGA VL32 w/1MB RAM	$65
Cirrus Logic SVGA VL32 w/1MB RAM	$65
Ultrastor 34F VLB Bus Mastering SCSI Host	$350
Tekram DC-680 IDE IO VL32 w/4MB Cache	$315
Wintach IDE IO VL32 Controller Card	$50
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From 250MB IDE to 340MB IDE HDD	$150

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80386 Systems:

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2. Free dynamic high resolution mouse with mouse pad.

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5. 48 Hours Burned-in and Immediate In-store Service
6. Novell Netware Installation Available

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All parts and systems carry a one year limited warranty except for monitors and printers which are warranted by manufacturers. Any consumable products are not returnable nor refundable. Any opened software is non-refundable. All sales on monitors and printers are final. Repairs need to be sent to the manufacturer. No refund. All returns are subject to our approval and must have prior authorization, return items must be in their original condition with invoice. Send shipping prepaid. All refund items must be returned within 14 days of invoice and a 20% restocking fee will be charged after the 14 day period and within 30 days of invoice. Thereafter only exchanges and repair for the rest of the warranty period. Price, specification and availability subject to change without any notice.

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see next page for maps ☛

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UMC 486DX-50MHz MB w/256KB Cache + CPU	$645	$625
UMC 486DX-33MHz MB w/256KB Cache + CPU	$480	$465
Orchid Weitek P9000 Graphics Engine VLB w/3MB	$435	$420
ATI Ultra Graphics Pro Plus VLB w/2MB VRAM	$435	$420
Diamond Stealth 24 VLB w/1MB RAM	$215	$200
Orchid Fahrenheit VLB w/1MB RAM	$190	$180
Actix S3 Graphics Engine VLB32 w/1MB RAM	$145	$140
ET4000 VLB32 True Color w/1MB RAM	$119	$110
Cirrus Logic VLB32 True Color w/1MB RAM	$109	$100
Ultrastor 34F VLB Bus Mastering SCSI Host Adapter	$325	$300
Tekram DC-680 VLB IDE w/IO and 4MB Cache	$325	$315
Wintach VLB IDE w/IO Controller Card	$60	$57

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Micro Video Controller Card Full motion NTSC/PAL video, provides freez/unfreez, save, load and export image features. Video input can be from VCR, camcorder or videodisk. Overlay VGA graphics and text on Video.	$375	$350
Sound Blaster Pro Basic w/2 CD Titles	$175	$165
Multimedia Upgrade Kit; Includes Sound Blaster Pro, Sony CDR31A and 6 CD Titles	$475	$455
80MB 16ms IDE Hard Disk Drive	$190	$185
120MB 15ms IDE Hard Disk Drive	$220	$210
170MB 15ms IDE Hard Disk Drive	$250	$240
210MB 14ms IDE Hard Disk Drive	$315	$305
250MB 14ms IDE Hard Disk Drive	$340	$330
340MB 13ms IDE Hard Disk Drive	$490	$470

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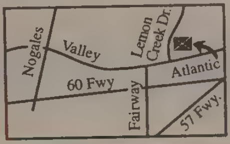

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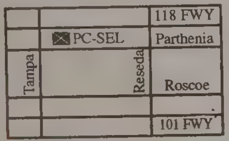

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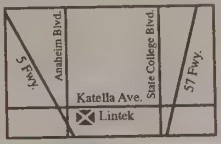

CD Titles

	Regular	Cash
Encyclopedia 92 American Academy	$55	$50
Reference Library 2.0	$35	$32
Books of Mammals	$45	$40
CIA World Fact Book	$20	$18
Time Table History	$35	$32
Magazine Rack	$30	$27
Time Comp. Almanac	$35	$32
Wing CMDR/Secret Mission	$40	$36
Great Cities of the World	$40	$36
US Atlas w/Auto Map	$30	$27
Wing CMDR/Ultima VI	$35	$32
Chessmaster 3000 (MPC)	$30	$27
Microsoft Bookshelf (MPC)	$65	$60
Microsoft Works (MPC)	$75	$70

Math Coproc. and RAM's

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80387-40MHz Math Coproc.	$95	$90
80387-33MHz Math Coproc.	$90	$85
80387SX-33MHz/25MHz Math Coproc.	$75	$70
4MB x 9 or 4MB x 3 60ns SIMM	$185	$180
4MB x 9 or 4MB x 3 70ns SIMM	$150	$145
1MB x 3 60ns SIMM	$40	$37
1MB x 3 70ns SIMM	$35	$33

CD-ROM's

	Regular	Cash
Mitsumi CD-ROM w/C.C. (350ms)	[illegible]	[illegible]
Sony CDR 31A w/C.C. (480ms)	[illegible]	[illegible]
NEC CDR84 w/C.C. (280ms)	$575	$560

(MPC compatible, support Kodak photos, CD standard)

ADD-ON Cards

	Regular	Cash
VESA LB 32 Bit IDE w/I/O	[illegible]	[illegible]
VESA LB SCSI Controller Card	[illegible]	[illegible]
EISA IDE Controller Card (DTC2290)	[illegible]	[illegible]
EISA IDE C.C. w/1MB Cache	[illegible]	[illegible]
EISA SCSI C.C. (DTC3292)	[illegible]	[illegible]
ISA IDE C.C. w/1MB Cache	[illegible]	[illegible]
ISA SCSI2 C.C. w/1MB Cache	[illegible]	[illegible]
ISA IDE w/IO Card	[illegible]	[illegible]
ISA 2.88M IDE w/IO	[illegible]	[illegible]
ISA AT I/O	[illegible]	[illegible]
Parallel Card for Printers	$10	[illegible]
Hi Speed 16550 AT I/O Card	$40	$35

Input Devices

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142 Key Programmable Keyboard	[illegible]	[illegible]
104 Key Programmable Keyboard	[illegible]	[illegible]
FK9000 128 Key Programmable	[illegible]	[illegible]
FK2001 101 Key Click Keyboard	[illegible]	[illegible]
Chicony 5181 101 Key Soft Click	[illegible]	[illegible]
BTC7000 101 Key Soft Touch	[illegible]	[illegible]
Microsoft (OEM) Serial Mouse	[illegible]	[illegible]
Logitech Serial Mouse	[illegible]	[illegible]
A4 Serial Mouse, HiRes	$18	[illegible]

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COMPUTER Of The Month:

Bondwell 486NC/R

Bondwell offers computers of excellence at reasonable prices. Their removable hard disk cartridge machine is truly innovative and the only computer to offer this particular feature. The Bondwell 486NC/R is built around a Cyrix 486SLC chip running at 25MHz. A 33MHz unit is available for an extra $100.

It weighs 5.2lbs and measures 11.7" x 8.5" x 1.5". The light weight is achieved in part by designing the computer with no built-in floppy drive. Instead, Bondwell has elected to provide a detachable floppy drive that fits neatly onto the side of the computer. When you are traveling, you can easily pack the floppy drive away in your baggage and use it only when needed.

The computer's rechargeable NiCad battery pack is smaller than most I have seen, but still will run from between two and four hours, depending upon your use and how the power saving options in the Setup program are configured.

> **The most remarkable feature of this Bondwell is its hard drive system.**

The 486NC/R has a VGA, white-on-black display that measures 10" diagonally. The built-in display is excellent, but if you need color you will have to use an external monitor. One is easily attached through the video port on the back of the machine. I have recently begun using ETC Computer's 15" flat

Continued on page 136

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386-40Mhz Motherboard w/64K	225.00
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Adaptec 1522 SCSI Host Adapter	135.00
Adaptec 1542 SCSI Host Adapter	269.00
Adaptec 1742 SCSI Host Adapter	449.00
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Diamond Speedstar 24X VGA Card	179.00
HP Laserjet 4	1395.00
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Smartlink 2400BPS Modem	42.00
Trident Super VGA Card w/1MB	69.00
Verbatim Magneto Optical Disk	139.00

NETWORK PRODUCTS

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Addtron 8-bit Arcnet (Combo)	55.00
Addtron 16-bit Arcnet (Combo)	75.00
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3Com® 16-bit Etherlink II	179.00
3Com® 16-bit Etherlink III	149.00
Addtron 8-bit Ethernet	69.00
Addtron 16-bit Ethernet (Novell Certified)	99.00
Addtron 16-bit Ethernet (3-in-1)	115.00
Addtron EISA Ethernet (3-in-1)	299.00
Addtron Pocket Ethernet	215.00
Artisoft Lantastic AE-2	229.00
Artisoft Lantastic AE-3	279.00
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SMC 16-bit Ethernet Card	139.00
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3Com® 16-bit Etherlink IITP	179.00
3Com® 16-bit Etherlink IIITP	149.00
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Addtron 2 Port Ethernet Repeaters	459.00
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Artisoft Lantastic AI v4.1	65.00
Novell NetWare Lite v1.1	65.00
Novell NetWare 2.2 5 Users	505.00
Novell NetWare 2.2 10 Users	1095.00
Novell NetWare 2.2 50 Users	1995.00
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Novell NetWare 3.11 10 Users	1394.00
Novell NetWare 3.11 20 Users	1950.00
Microsoft Workgroup for Windows	75.00
Miscellaneous Network Softwares	
daVinci E-mail for DOS w/MHS	CALL
Intel LANProtect	715.00
Intel LANSight	298.00
Intel NetSatisFaxtion Server (unlimited)	720.00
Lotus cc:Mail	CALL
Softnet Fax Server (2 nodes)	149.00
Softnet Remote File Xchange	169.00
Symantec PC Anywhere 4.5 LAN	375.00
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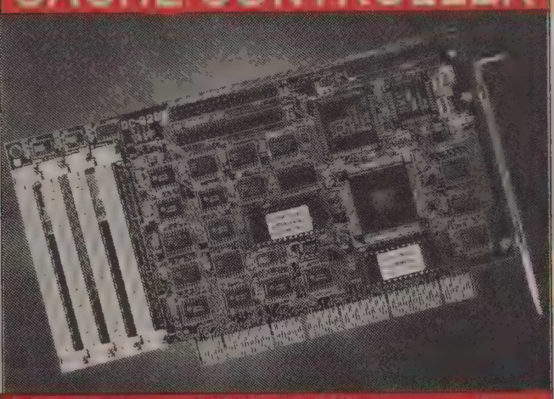
25 Feet RG58 Coaxial Cable (Ethernet)	12.00
50 Feet RG58 Coaxial Cable (Ethernet)	22.00
25 Feet RG62 Coaxial Cable (Arcnet)	15.00
50 Feet RG62 Coaxial Cable (Arcnet)	28.00
Barrel Connector	1.75
BNC Connector	2.00
BNC Terminator	2.00
T-Connector	2.00

• Call for customized network cables!!! •

CACHE CONTROLLER



VL-Bus IDE	239.00	ISA IDE	169.00
EISA SCSI	449.00	EISA IDE	229.00

• All controllers are upgradable to 16MB Memory

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16-bit 10 Base-T Card	79.00
3Com 8-bit Ethernet Card	59.00
3Com EISA Ethernet Card	269.00
Tiara 8-bit Arcnet Card	39.00
Racal 16-bit 10 Base-T	89.00
Addtron 16-port 10 Base-T Hub	559.00

486SX/25 NOTEBOOK

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- 3.5" 1.44MB Floppy Drive
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- Carrying Case w/Numeric Keypad

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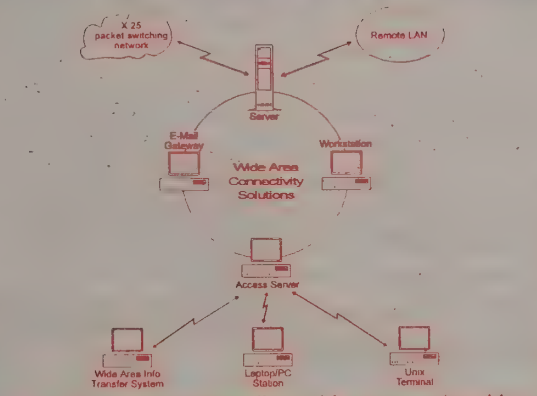

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Omni 900 Lan	558.00
UPS Monitoring Software	59.00
BC-1250 Lan	520.00
BC-600 Lan	268.00
BC-900 Lan	382.00
Isobar 4 Ultra	44.00
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ATC486-33

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* Cyrix 486DLC-33 *
* Processor *

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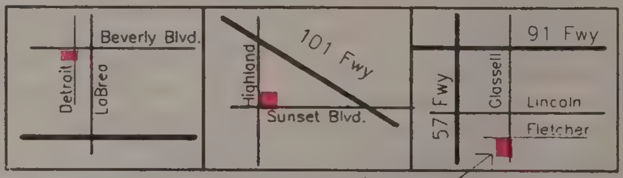

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Washington State Demonstration Pilot Program

A New Study Explores The Impact Of Telecommuting

BY ROBERT MOSKOWITZ

In 1990, the Washington State Energy Office launched a carefully controlled study of telecommuting called the Puget Sound Telecommuting Demonstration Project. The final report on this project, released within the last two months, contains a wealth of factual and anecdotal data that sheds new light on the actual and potential impact of widespread telecommuting, and gives anyone involved in a telecommuting effort a broader perspective on such programs.

Twenty-five public and private organizations participated in the Puget Sound Telecommuting Demonstration Project (PSTDP). Most telecommuters simply stayed home certain days to do their work, but twenty-four telecommuters from nine organizations began working one or more days per week at a newly established Washington State Telework Center, located in Seattle.

> **Only about 30% of the project's telecommuters required special equipment to be purchased so they could work away from the office effectively. But in most cases this special technology greatly improved performance on the job.**

The PSTDP was designed to achieve several major goals, including:

- Demonstrate telecommuting to employers in the region;
- Research and evaluate the impacts of telecommuting on the environment, energy use, employees and their families, and employer organizations;
- Assess the potential for widespread telecommuting in the region.

As with other demonstration projects and pilot programs, the results of the PSTDP can be generalized more or less accurately to cover other situations, and thus help organizations which are contemplating a telecommuting program do a better job of planning and implementing a successful effort. Here's a brief summary of the project's final report.

ON TECHNOLOGY

Many people assume that complex, expensive technology is an integral part of a successful telecommuting program. Often, program managers develop formal expectations that telecommuting will require computers, modems, fax machines, voice mail, and other associated high-tech equipment. In the PSTDP, however, equipment proved to be far less important than initially anticipated by either participants or their supervisors. One in eight of the telecommuters involved in the PSTDP needed no special equipment at all. When equipment was needed, many participants were able to supply their own, and many others used surplus equipment readily available from their employers. Only about 30% of the project's telecommuters required special equipment to be purchased so they could work away from the office effectively. But in most cases this special technology greatly improved performance on the job.

ON COMMUNICATION

Far more important than computers and other specialized equipment was the simple ability to communicate with coworkers, supervisors, and others. To remedy this problem, one in four telecommuters wound up adding a second telephone line to their home, at an average cost of $7 per month (which in most cases was paid for by the employer). The addition of a second telephone line not only upgraded the ability to communicate, it helped telecommuters to maintain a professional or businesslike profile for both colleagues and those outside the organization.

The PSTDP revealed some interesting communication problems. For example, non-telecommuting coworkers indicated in follow-up interviews that they were occasionally reluctant to call a telecommuter at home, even though under similar circumstances they would not have hesitated to make contact in the office. In one case, a telecommuter who receives a great many telephone calls found that coworkers who had to answer his phone on days he worked at home began to resent his absences from the office. On at least one day, they failed to pass along the messages. Later, the telecommuter gained access to a new voice mail system, and the technology seemed to eliminate both the resentment and the delay in receiving messages.

ON ACCEPTANCE

Workers who had never telecommuted before took to the experiment rather well. For example, nearly half were successful working at home just one day a week, while more than one in five of the participants were successful working at home more frequently. The most common days for telecommuting turned out to be Wednesday and Thursday. During the study, the telecommuters also proved to be very flexible about their new approach to work. When some of the program's participants found pressures to perform at the office building up, such as during busy seasons or periods of unusually heavy demands, the telecommuters found it easy to change their work schedules and simply spend fewer days away from the central site. Supervisors also found it very easy to schedule important meetings or change work assignments without worrying whether telecommuters could accommodate the new plans.

Certainly one of the most critical factors in the success of any telecommuting program is supervisor support. During the PSTDP evaluation, more than 90% of the participants reported that their supervisor favored the new arrangements. But there were some prob-

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lems. In the follow-up phase of research which came after a year of telecommuting, the percentage of participants who said they were getting adequate feedback from their immediate supervisor declined slightly, from 65% to 57%. This tends to bolster the widespread understanding that maintaining adequate communication between supervisors and telecommuters requires more effort than when supervisors and employees work exclusively in the office together.

ON PRODUCTIVITY

One of the critical issues in telecommuting is its effect on worker productivity. Many studies have shown marked increases among those who telecommute, and the PSTDP yielded results consistent with these expectations. But it also produced evidence that without proper planning and management, productivity improvements from telecommuting can be partially or fully offset by the negative impact of telecommuting on others in the work group.

For coworkers who remained in the office five days a week, supervisors noted some problems. For example, more than 40% of coworkers showed envy of the telecommuters.

For example, 89% of PSTDP telecommuters rated their productivity as "excellent" after a year of telecommuting experience, compared with 83% the year before, when they had not yet begun telecommuting. Nearly 30% of the project's participants who were telecommuting said their productivity went up during the year, while only 8% thought they had been less productive. Supervisors, however, were somewhat less enthusiastic about the impact on productivity of letting people work outside the office. One-third of the supervisors said the telecommuters they managed were less productive during the year, and their willingness to rate telecommuters as "excellent" dropped slightly from 76% of those participating in the project (when the project began) to 68% (after a year of telecommuting experience). Although supervisors said at the beginning of the project only 2% of program participants "needed improvement," after a year of experience they rated a full 10% of the telecommuters as "needing improvement."

Perhaps the most interesting attitudinal change among supervisors was their reaction to the comment: "Some people take advantage of telecommuting to slack off on their work." Before the project began, only 12% of the supervisors in the PSTDP agreed with this sentiment. After a year of telecommuting experience, 20% agreed with it.

How The Demonstration Project Was Run

Because the Puget Sound Telecommuting Demonstration Project (PSTDP) was intended to be a research effort yielding reliable and replicable results, project coordinators expended considerable effort in recruiting the pairs of telecommuters and supervisors who eventually agreed to participate. Applicants were initially asked to fill in a questionnaire, and their responses were carefully analyzed. If either the potential telecommuter or the immediate supervisor did not meet certain criteria, or if there were signs of unusual circumstances or difficulties that might prevent successful telecommuting, the pair were not included in the project.

About 280 telecommuters, as well as their supervisors and coworkers, and a scientific comparison group which did not telecommute during the research phase of the project were recruited as participants in the PSTDP trials. The PSTDP included one full year of active telecommuting, although the total length of the project—including recruitment, analysis, and report writing—was nearly double that.

Once the participants were selected and pledged to a year of telecommuting within the PSTDP, they received at least one day of training on such matters as policies and procedures, work flow considerations, setting up a home office, compensating for any telecommuting impact on coworkers, and communication techniques. Supervisors received additional training in "managing by results," intended as a way to defuse the common problem of supervisors who feel—rightly or wrongly—that a worker out of sight is a worker not performing up to par. The pairs of telecommuters and supervisors were also coached in reaching a workable arrangement for telecommuting.

The research portion of the project involved all the participants and a comparison, non-telecommuting group of employees in a steady stream of surveys, interviews, and focus groups. In addition, particular segments of those participating became the subject of in-depth case studies, and all the telecommuters were required to keep daily travel logs.

—Robert Moskowitz

ON THE IMPACT OF TELECOMMUTING

The PSTDP yielded other unexpected results when analysts looked at the impact of telecommuting on coworkers who remained in the office. More than one in four of these non-telecommuters felt their work load was larger after telecommuting began. Moreover, they attributed the increased burden directly to the telecommuting patterns of others in the office. This feeling was particularly marked when the worker's immediate supervisor switched over to part-time telecommuting. It may be reasonable to conclude from this that supervisors who manage office-bound workers have a more difficult time making a success of telecommuting.

The evidence cuts both ways, though. One in six of the telecommuters agreed that their new schedule was shifting extra work onto staff subordinates who remained in the office. But another 6% believed their new pattern of part-time telecommuting resulted in less work for their support staff.

ON PERSONAL SATISFACTION

On a more personal, individual level, the PSTDP showed that telecommuting favorably impacts morale, quality of life, and job satisfaction. Curiously, though, many of the telecommuters had stress levels as high—or higher—than people in equivalent jobs who do not telecommute. Nevertheless, telecommuters reported that the ability to eliminate at least two trips per week to the office—thus avoiding at least some of the week's traffic load—contributed to a much lower work-related stress level than they would have otherwise experienced, and tended to make telecommuters much happier than they had been before the PSTDP began.

Individual telecommuters also cited such benefits of telecommuting as extra quiet time in which to work, significant time saved from commuting which could be put to more productive use, and more flexibility in scheduling their time.

According to supervisors, telecommuting had a positive impact on job satisfaction for those actually doing it. But for coworkers who

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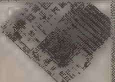

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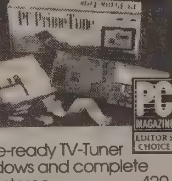

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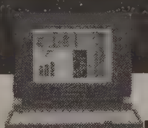

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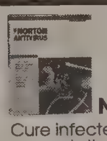

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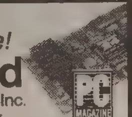

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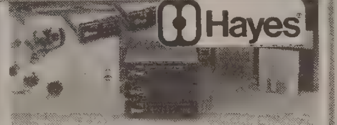

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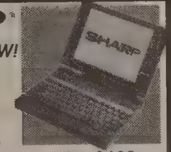

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These reactions and feelings are further indications that many employees prefer this style of work precisely because it gives them more freedom to perform in their own way. For example, telecommuting tends to facilitate concentration and eliminate unwanted interruptions. It also allows each individual to do more work during his or her most productive hours of the day.

ON THE ENVIRONMENTAL IMPACT

Telecommuters in the PSTDP were asked to keep detailed travel logs. After analysis, these logs showed that before the project began each individual averaged fifty-two miles per day in 101 minutes of drive time. After a year of telecom-muting, they averaged forty-nine miles in ninty-one minutes on regular work days, and only thirteen miles in thirty-five minutes on telecommuting days.

The average telecommuter working at home trimmed something like thirty-four commutes to work and fourteen hundred miles from a year's worth of driving. The average telecommuter working at a telework center eliminated very few commuter trips, since he or she still had to get from home to the telework center, but saved about twenty-six hundred miles of driving per year.

Significantly, most of the reduction came during peak traffic hours, when it does the most good for traffic reduction.

ON THE CHARACTERISTICS OF A GOOD TELECOMMUTER

According to extensive research into those who participated in the demonstration project and those who were part of the comparison group, those who agreed to try telecommuting are slightly more likely than their non-telecommuting counterparts to be part of a high-income household and to be included in a "professional" job description. They also tend to rate their own job performance higher than those who do not telecommute. ■

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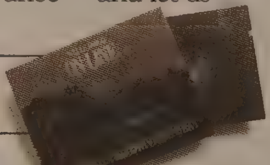

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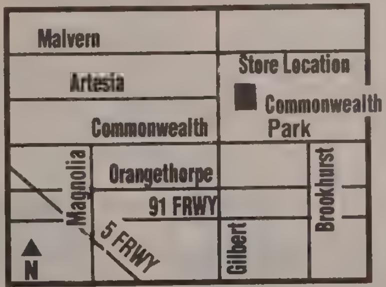

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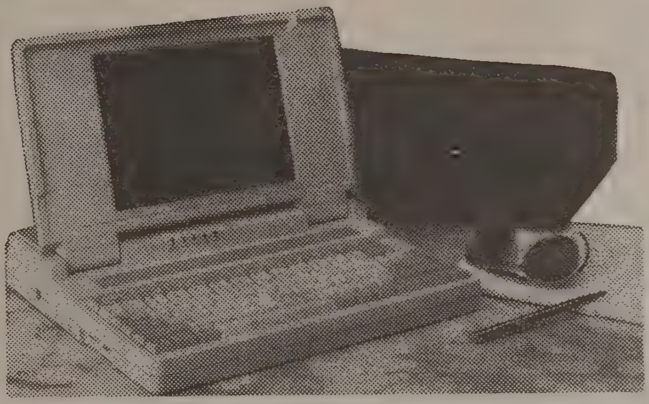

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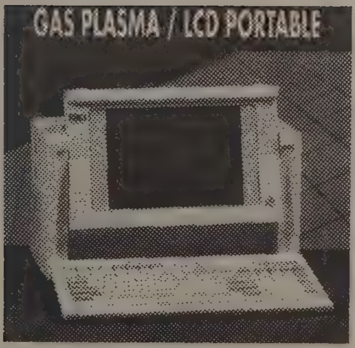

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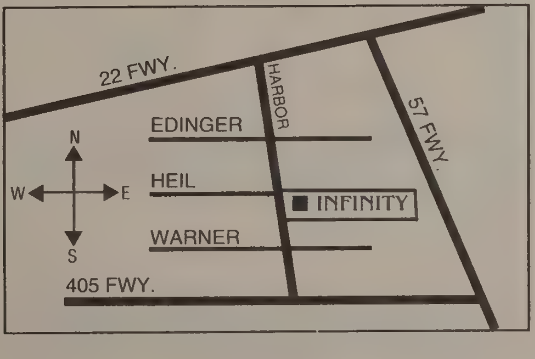

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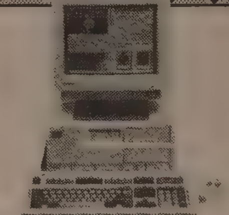

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ACER AMERICA

Competitive Strategies For The Global PC Marketplace

It's hardly news that the last few years have seen a colossal shakeout in the PC-compatible computer industry; even giants like Compaq and IBM itself have been forced to make drastic changes in their strategies and organizations to cope with short product cycles, commoditization, and shrinking profit margins; and other once-mighty players have fallen by the wayside.

A clear winner in the PC wars has been Acer America, the San Jose-based subsidiary of the Taiwanese giant The Acer Group. With sales of $301 million in 1992 (approximately 25% of The Acer Group's revenue for that period), Acer America is a significant presence in the US personal computer marketplace.

ACER AMERICA PRESIDENT RONALD CHWANG

The $301 million sales figure represents an increase of 50% over the previous year, in a period when, according to IDC, the industry as a whole grew only 10%. According to President/COO Ronald Chwang, this success is due to Acer's diverse strategy for dealing with market changes—for example, the recent introduction of a low-cost ACROS line aimed at the growing small business/home office market, a diverse dealer channel that includes everything from VARs and local dealers to J.C. Penney and the American Express catalog, and an innovative program of direct customer service and support across the product line. Another key

BY MARY EISENHART

factor is the transition to just-in-time manufacturing at its San Jose facility, which assembles most of the Acer products sold in the US and Canada.

Chwang, who came to Acer in 1986 after working in development and management at Intel and Bell Northern Research, most recently served as president of The Acer Group's Acer/Altos Systems business unit, where he led the development of integrated UNIX solutions and advanced technologies including Acer's Advanced RISC computers, based on the MIPS family of CPUs. He also oversaw the development of Acer's well-received AcerPAC multimedia platform.

We recently spoke with Chwang concerning Acer's strategies for prosperity in a changing and difficult marketplace.

How does Acer position itself in the PC marketplace?

Acer basically tries to differentiate itself from the rest of the suppliers in the PC industry in three areas: we are a long-term player; we have a very broad base of technology; and we're always looking at value/price/performance leadership.

Lately, in the US particularly, we've been very successful; also in creating new channels and expanding our business here.

Where does Acer America fit in The Acer Group?

Acer America is about $301 million, about 25% of the total revenue. This $301 million is mostly in our brand-name business; we also do OEM business, supplying systems to other people. Of our business, about 30% is OEM and 70% brand-name.

The US operation is a subsidiary of The Acer Group, and we market and distribute all the Acer products in the United States and Canada. In addition, we have a number of R&D projects going on here—one area, through the acquisition of Altos about two years ago, concentrated on UNIX integrated system development. The other area is in the Advanced Multimedia Project, which resulted in the introduction of integrated multimedia systems like the AcerPAC. Finally, we also do most of the RISC design over here in the US.

One very big difference between Acer and its competitors is that in the US we assemble basically all the products we ship in the United States. We produce between fifteen to twenty thousand units a month for the market.

The Acer Group has a very broad line of products other than computers. We sell chipsets for the PCs; we also go from components all the way to multiprocessor systems. We're a manufacturer of basic key modules, such as keyboards, printed circuit boards, and dynamic RAM. The DRAM is a joint venture with TI, currently producing over 1.5 million units per month. We do business in about seventy countries.

We put about 5% of our revenue into R&D; our R&D is done about one-third in the United States and two-thirds in Taiwan. When you consider that the cost of doing R&D in Taiwan is probably a little lower than it is in the US, it translates to the equivalent of 7–8% for a US company. We have a total of five thousand people, and over eight people are in areas related to product development. So it's a company with a very heavy R&D emphasis.

We are one of the major key component suppliers. In monitors, we produced over one million units last year; we're about the sixth-largest color manufacturer in the world. On the ASIC side, we supply chipsets, mainly for the market in Taiwan, for the motherboards. We have approximately a 35% market share for that. We also manufacture keyboards for many of the OEMs as well as for ourselves; we're in the top five worldwide. Starting this year, we also started to supply some of the motherboards to the market, in addition to just the systems.

BIOS is also an important technology. Most companies use BIOS supplied from other sources; we developed our own BIOS, and that allows us to sometimes do a few things a little differently from the other suppliers.

Most of our competitors are becoming either assembly houses or even distributors of PCs made by other companies. Acer has a commitment to the subassemblies and a lot of the products down to the component level. This allows us to keep good quality controls over those components, and it helps us to be in control of the cost structures.

We do about a third of our business in the US, about a third in Europe, and one-third in the rest of the world. When you consider the amount of business we do in the rest of the world, our position is very different. We are ranked #1 in market share in different countries. In Mexico, Acer has a 22% market share; we're #1 there, and in many South American countries. Also in the Far East, particularly in the Pacific area—Thailand, Taiwan, Malaysia, Indonesia, Singapore—and also in the Middle East. Those are the areas which had very large growth last year, while the rest of the world, particularly in Europe, did not have significant growth.

One of our differences from other companies is that we have a fairly balanced revenue structure, so we are not particularly subject to the economic fluctuations in one particular region. So we're a little more stable financially in terms of long-term survival.

One of the key achievements in 1992 is that we completed our ISO 9000 certification, in our manufacturing plants around the world. That includes Taiwan, Malaysia, and San Jose.

What does ISO certification mean?

ISO certification means that you go through a quality certification process to ensure that your manufacturing and your R&D have the right type of process and procedures; that you follow the same method of doing things, and maintain the same standards.

It's very important for doing business in Europe today, because many of the customers demand that products be supplied only from companies that have been certified. It's becoming a very important thing for US companies to do, to try to maintain their quality. Many companies in the Bay Area have gone through, or are doing, the same type of certification.

The manufacturing you do here is essentially assembling systems from components manufactured in Taiwan and Malaysia, so you can do relatively just-in-time manufacturing here?

Right. I think that's a key strategy and difference where we can actually prosper in this very difficult and low-margin business.

> "We run about thirty-five or forty models of different systems today—it all comes out of two housings and two motherboards. The motherboards are all designed to be able to insert multiple frequency CPUs, so you very easily can switch production to the particular type that's in demand."

The traditional path in the past is that you build a very large factory, with automation, volume; you crank out PCs by thousands of units a day. The company, to be successful, traditionally required technology, channels, service, and support.

But because the PC infrastructure is so different from other industries—in particular, the product life cycle time is so short—in the '90s, logistics and distributed manufacturing become important.

When the margins on the PC are relatively reasonable, you probably will not pay too much attention to inventory costs. Imagine that you have to prepare materials and build the machine offshore, ship them by water to the United States. They sit in a warehouse; they go through the distributor; they go to the customer—this pipeline is about four to five months. The average costs of the components drops, let's say, 20% a year. In the four-to-five-month period, even before the product reaches your customer, your value of the goods has already been discounted by 4–5%. That's very significant when the margins become very tight.

Also, because the product life cycle is so short,

Continued on page 104

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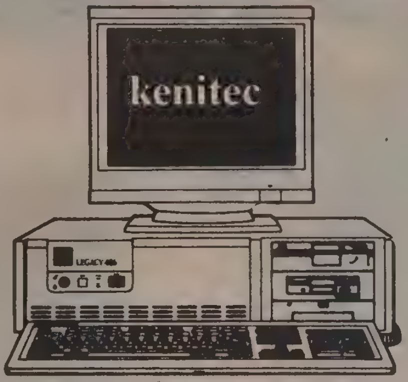

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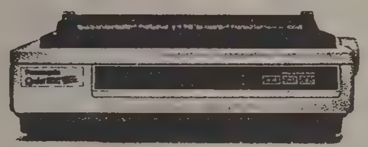

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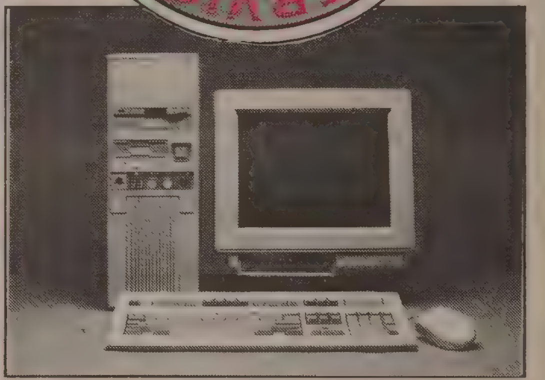

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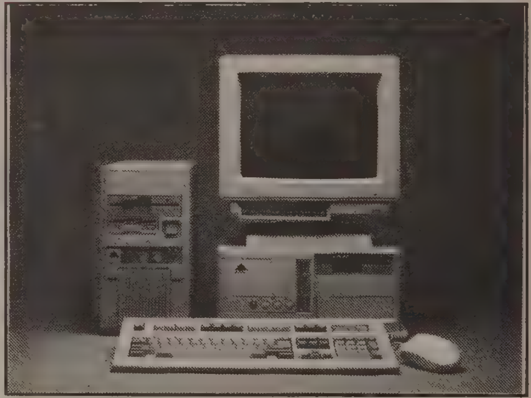

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High-End DTP Packages For Windows

Quark, FrameMaker, Ventura—And Waiting In The Wings, PageMaker 5

BY RICH GRACE

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Ventura Software, Inc.
(619)673-6000

FrameMaker, $795
Frame Technology Corp.
(408)433-3311

PageMaker, $895
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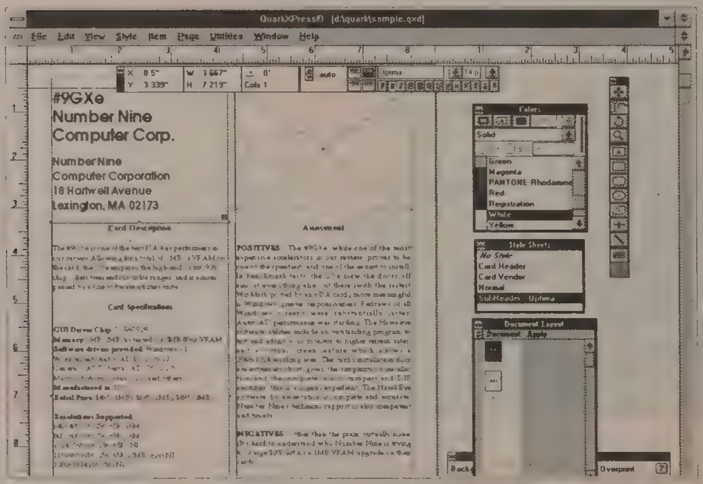
(206)622-5500

With the release of Quark XPress for Windows last year, Windows users have begun to enjoy the same range of powerful options long known to Macintosh users. What follows is an overview of the leading contenders.

Quark XPress for Windows

For years, PageMaker and Ventura Publisher have dominated the PC desktop publishing software market. Both programs are worthy and powerful packages. Unfortunately for PC users, the Macintosh desktop has always been viewed—justly—as the preeminent microcomputer publishing platform.

That's primarily because of the reputation of Quark XPress. Quark is one of those programs that established the Macintosh. It's acquired a devoted (not to say fanatical) following, for whom nothing else will suffice. Most service bureaus rely on Quark for their painstaking page layout tasks.



#9GXe
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Computer Corp.

Number Nine
Computer Corporation
18 Hartwell Avenue
Lexington, MA 02173

Card Description

Card Specifications

Assessment

With the advent of Windows 3.x, the PC finally acquired a reasonable GUI, and major vendors—Quark Inc. and Frame Technologies—began porting their flagship products to the laggard PC platform. FrameMaker was out first, in mid-'92, and immediately positioned itself as the direct competitor to Ventura in the long-document, technical writing and composition end of the publishing market. Quark for Windows was finally released in December '92, but only to a select few distribution houses in what can only be described as an idiosyncratic marketing ploy. After two weeks assessing Quark for Windows 3.1, I feel safe in calling it a welcome addition to this competitive field.

THE CONTROL PALETTE AND THE TOOLBOX

Quark supports the Multiple Document Interface (MDI), which means that several Quark layout files can be open at once for your work. The Quark screen is comprised of one or more document windows, and several floating windows and palettes.

One of the key facets of Quark's user interface is the floating Control palette, which changes its tools and characteristics as you work with different elements of a document—pictures, text, and graphics drawn in Quark, such as lines and circles. Once you get used to the floating palette changing its features every time you click on another element of your document, it rapidly becomes a handy and speedy tool, encompassing many of the program's key features and saving tedious voyages through menu levels. (A control palette is also supported by the upcoming PageMaker 5.0, which, since it's still in beta, isn't available for review in this issue.)

The layout screen of Quark XPress can get a little crowded; it's possible to have as many as six palette windows open along with your document (see illustration). Because of this, Quark defaults to a single-page view, which you scroll through to subsequent pages. Personally, I've grown very accustomed to having the several palettes open, because of the rapid access to tools and features that results.

Another nice feature which has been transported from the Mac is the practice of selecting varying amounts of text with an appropriate number of mouse clicks. Four mouse clicks will select an entire paragraph, and three will select a sentence, for example. There's also an Application Preferences menu option, which allows you to make adjustments to the program's performance—you can adjust the DPI (dots per inch) on the screen, which also amounts to increasing the Zoom factor on your default page views. If your text is too small to read comfortably in your preferred view, adjust this option.

At first, I simply thought Quark was too slow in its screen updates, even with a 486-33 and one of the fastest Windows accelerators on the market; adjusting the scrolling speed (another option offered in Application Preferences) renders it much more acceptable for impatient users like myself.

To build a Quark layout, you draw text and picture boxes on a blank page. As with other major programs, you can place blank elements on a master page, or such things as header and footer text, for a consistent layout from page to page. If you place text boxes on a master page, those boxes will appear on every subsequent document page attached to that master, and can be moved or adjusted or resized on any of those document pages *without affecting the master.* Also note that Quark allows the use of multiple master pages in the same document—allowing for, as an example, complex newsletter and newspaper designs which traditionally change page formats between sections.

While placing boxes as an intermediate step to text or graphics layout adds a step which PageMaker doesn't require, the flexible "boxes" metaphor has significant advantages over PM's "Pasteboard" system. For example, once you place an item on a PageMaker master page, it is locked in place and

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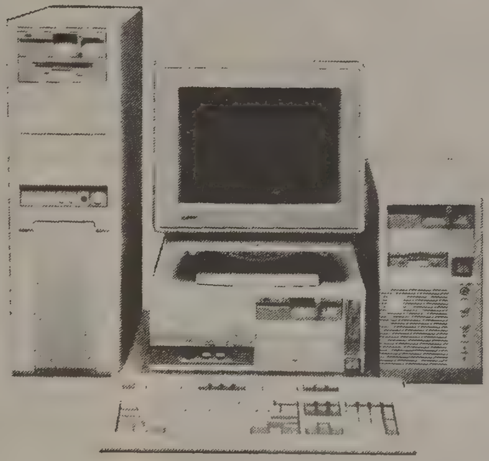

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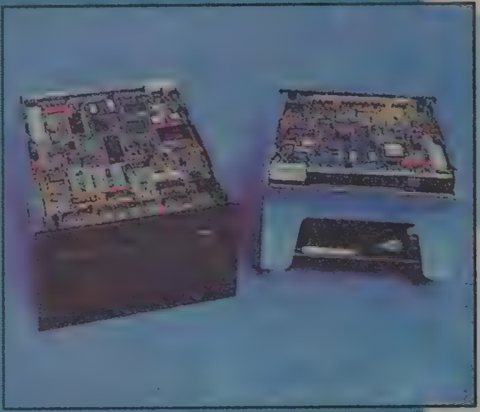

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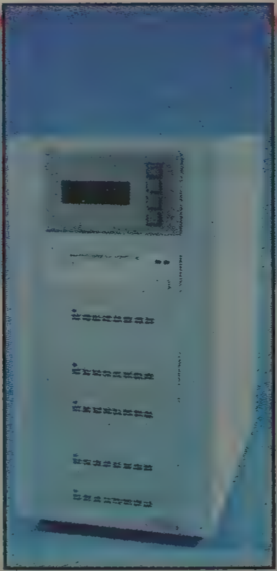

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cannot be moved. Further, the lack of text boxes in PageMaker, while speeding up some layout processes, also implies a certain imprecision in layouts requiring fine tolerances. Quark's text and picture boxes, on the other hand, can be resized either with the mouse or in a dialog box, the latter within one-thousandth of a measuring unit. This level of precision has earned Quark a devoted following.

Picture boxes, by the way, can be shaped in various fashions, with rounded corners, ovals, and user-drawn polygons to reflect any shape of a picture. Picture boxes are also scrollable. In other words, a picture in a box can be moved with the mouse to any offset position—to crop or cut off a segment of a picture which you may not want displayed. Pictures (like the boxes in which they're contained) are also resizable, by mouse or by specific percentages. Text and picture boxes can also be rotated by 360 degrees around the circle, and box backgrounds can have colors applied to them.

QUARK AND OLE

Object Linking and Embedding is one of Windows' most popular and powerful facilities. It enables users to combine numerous types of data into one document, and to have instant access to any of the applications that originally created that data—without the tedious starting and restarting of programs, and repetitive cutting and pasting of data into the Windows clipboard. Quark for Windows takes full advantage of OLE as a client application (a program which can receive embedded or linked objects from other programs, but cannot send objects to them), and thus interacts with other major applications in subtle ways.

For example, in the layout I created for the illustrations accompanying this article, several graphs have been placed into the Quark document. When the right tool in the Quark Toolbox (in this case, the Content tool) is selected and one of the graphs in a Quark picture box is double-clicked, the program that originally created the graph (Microsoft Excel, in this case) will appear, displaying the graph and ready for editing. This is called editing an Embedded object. Any embedded object (such as a sound waveform, an Excel chart, a picture in Corel Draw, or a Word for Windows text file), when double-clicked in Quark, will activate the application that originally created it. When you're finished modifying your object, simply choose Update from the File menu of the app, and your Quark document will show the changes you've made.

All the graphs you see in the accompanying illustration are embedded objects. Furthermore, you can transfer your Quark file with all the embedded objects to another computer, without having to bring all your object files with you—they're already present in your Quark layout file.

On the other hand, Excel (or other programs) do *not* appear when attempting a Linked object edit from within Quark. Linking an object in OLE means that you can have a copy of any picture or other things in multiple documents—say, a specific Excel chart in five or six different Quark files—and if you modify that chart *from within Excel*, all your Quark files will automatically be updated. However, you cannot double-click on a paste-linked object in Quark and expect your original app to appear. It doesn't work that way.

In any case, Quark's implementation as an OLE client is fine and a valuable asset for publishing work.

TYPE HANDLING

One of Quark's longtime strengths is its powerful type handling. In the new Windows version, desktop publishers have a remarkable array of type modification features available with a mouse click—including Superscripting, Subscripting, "Superior" text (in which selected text is superscripted with a smaller point size), outlining and shadowing of text, strikethroughs and underlining, and the more prosaic bolding, italics, and large and small caps. All these features are available on Quark's Control palette as a button bar. You can also change typefaces and make text tracking adjustments here.

Tracking, used over a range of selected text, is one of the precision type-handling features for which Quark has long been renowned; while PageMaker only allows you to change tracking specifications by set amounts, Quark allows you to specify as little as 1/200th of an em space and up to –500th or + 500th (a total range of five em spaces) for your letter spacing over a sentence, paragraph, or column. Negative values bring letters closer together, while positive values spread them apart. Extensive pair kerning is also supported, and can be adjusted in your actual PostScript fonts by editing the actual Kerning Tables for each typeface.

A feature common to other high-end packages which Quark also employs is that of Style Sheets. In Quark, style creation works much as it does in other programs, with existing styles or new ones created or modified in a dialog box. It's a real time-saving device which any serious publisher needs to master for time-intensive work.

QUARK AND COLOR

Quark's spot color features match PageMaker's, with complete support for the Pantone Matching System, CMYK (cyan, magenta, yellow, black) color mixing, and RGB color mixing. Any of these colors can be applied in the standard ways—to drawn lines, to box backgrounds, and other objects drawn directly on Quark's screen. Quark provides a color palette window which allows quick access to document-installed colors with a mouse click.

Color Trapping is another of Quark's professional-level features. Trapping is used for color separation, and is vital when you have text or pictures superimposed on color backgrounds. You can specify precise tolerances in which colors on a graphic can "surround" your object, and prevent color bleeding or overruns in a separation.

While a short review can't do full justice to Quark's features and flexibility, it's clear that Aldus has plenty to be worried about. While PageMaker continues to be delayed in its 5.0 release (which, it must be noted, will match Quark in many of the features discussed here), Quark has produced a solid, and in many ways *fun*, high-end publishing program.

Are there weaknesses? Only a few, but they're serious. One of the biggest problems is Quark's poor support for PCL printers—printing is very slow, and often drops characters from a layout! Quark for Windows also fails to move files successfully to the Mac version (though the reverse does work). This is a major problem in service bureau work.

I'd like to be able to drag-and-drop Quark files into a Program Manager group for automatic opening. I also can't understand why Quark couldn't include Box and Circle drawing tools. Other than that, for layout tasks, Quark is solid as a rock.

FrameMaker 3.0 For Windows

Beyond a doubt, FrameMaker has the most user-resistant interface of any program in its class. The Windows version is a direct import from every other version of the program in existence—many UNIX platforms and the Macintosh.

But despite the significant difficulties new users may have in embracing this program, FrameMaker achieves a nearly impossible task—enforcing consistency and uniformity across a huge range of computer platforms. I have successfully transferred a FrameMaker layout file (see illustration) from both the Windows and Mac verions of FrameMaker to a version running on a Sun workstation! Assuming you have similar fonts on all platforms, inter-platform operability is a reality with FrameMaker—more so than with any other program I'm aware of.

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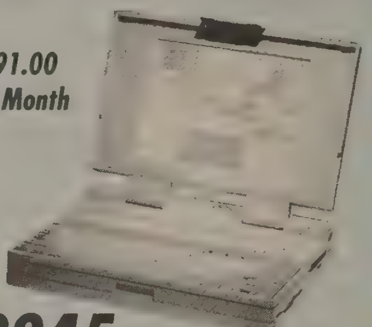

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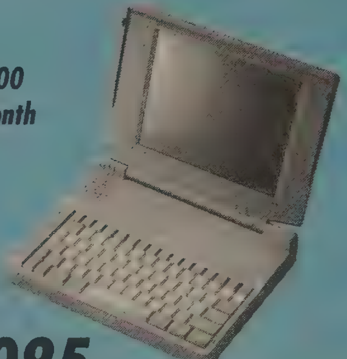

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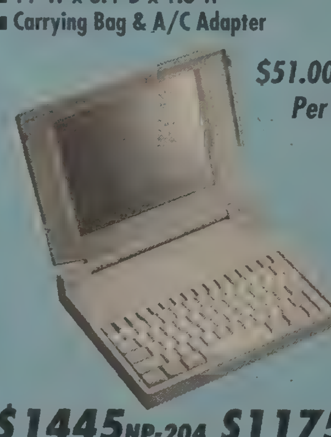

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THE HOBGOBLIN OF LITTLE MINDS?

This consistency can mean serious problems for Windows users, however. Even veteran Windows desktop publishers will be confronted with a completely nonstandard Windows front end for this program.

In FrameMaker, very few dialog boxes provide the standard Save, Cancel, and Use buttons most other packages employ. The FrameMaker toolbox and a Paragraph Catalog palette (FrameMaker's counterpart for a style sheet) are virtually the only facets of the program capable of speeding up the process of page layout and document design. It's especially painful to execute things such as paragraph formats with special leading and margin specifications, or to add new style formats to your paragraph catalog. These are fairly opaque processes whose methods are not obvious to experienced users of other programs, and are apt to be forgotten.

You also can't drag-and-drop a FrameMaker project into a Program Manager group as an icon for fast opening when you start the program. To be fair, Ventura Publisher (its immediate competitor) and Quark for Windows also fail to fulfill this need.

In short, FrameMaker's learning curve is very *steep*.

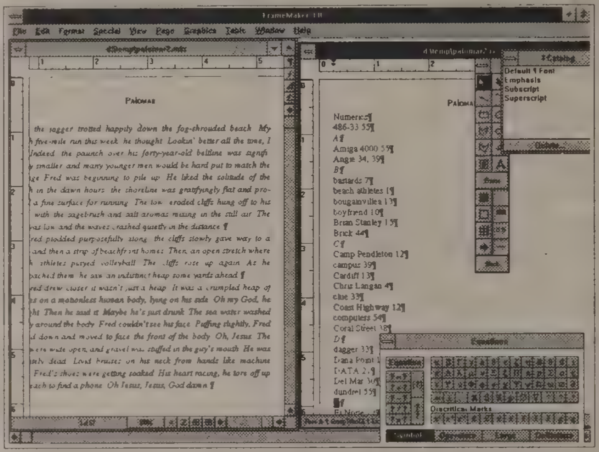
It's also hyperbolic to claim FrameMaker as the all-in-one application that can fill the needs of any office. As a word processor, the program does offer a nice Find and Change function, plus a solid and simple spell checker. Many basic text modification procedures are accessible through dialog boxes with a couple of keystroke combinations. For most basic word processor functions, FrameMaker is adequate but not spectacular.

I ran into problems importing Word for Windows text, with mismatched font sizes and irregular paragraph margins. FrameMaker's OLE implementation is also minimal. You can execute a Paste Special with graphics and sound objects, but not with word processor files!

You also can't wrap text around graphics without the remarkably arduous procedure of assigning a text frame to every line to be wrapped, and then stretching the frame to fit around the graphic. You may need to adjust dozens of lines this way. Because of this, FrameMaker is no threat to PageMaker, Quark, or even Ventura as a pure page layout program—in fact, as I see it, FrameMaker is virtually in its own market segment, as a dedicated long document creation program for power tech writers. Ventura, as we'll see later, has many more capabilities as a page layout program (and, in its current version, implements those capabilities in a much friendlier way) than FrameMaker, but also competes head-on in the long-document creation field.

DON'T LET THE INTERFACE STOP YOU

With these caveats duly noted, let's take a look at some of the extremely powerful capabilities FrameMaker has to offer. For its specific mission, FrameMaker has some of the most effective tools I've ever seen.



Palomar

the zagger trotted happily down the fog-shrouded beach. My
h five-mile run this week he thought. Lookin' better all the time, I
Indeed the paunch over his forty-year-old beltline was signifi
y smaller and many younger men would be hard put to match the
ge Fred was beginning to pile up. He liked the solitude of the
h in the dawn hours: the shoreline was gratifyingly flat and pro-
a fine surface for running. The low eroded cliffs hung off to his
with the sagebrush and salt aromas mixing in the still air. The
vas low and the waves crashed quietly in the distance ¶
red plodded purposefully along the cliffs slowly gave way to a
and then a strip of beachfront homes. Then, an open stretch where
h athletes played volleyball. The cliffs rose up again. As he
oached them he saw an indistinct heap some yards ahead ¶
red drew closer it wasn't just a heap. It was a crumpled heap of
s on a motionless human body, lying on his side. Oh my God, he
ht. Then he said it. Maybe he's just drunk. The sea water washed
y around the body. Fred couldn't see his face. Puffing slightly, Fred
d down and moved to face the front of the body. Oh, Jesus. The
were wide open, and gravel was stuffed in the guy's mouth. He was
tely dead. Livid bruises on his neck from hands like machine
Fred's shoes were getting soaked. His heart racing, he tore off up
each to find a phone. Oh Jesus, Jesus, God damn ¶

Paloma

Numerics¶
486-33 55¶
A¶
Amiga 4000 55¶
Angie 34, 39¶
B¶
bastards 7¶
beach athletes 1¶
bougainvillea 13¶
boyfriend 10¶
Brian Stanley 15¶
Brick 44¶
C¶
Camp Pendleton 12¶
campus 39¶
Cardiff 13¶
Chris Langan 4¶
clue 33¶
Coast Highway 12¶
computers 54¶
Coral Street 38¶
D¶
dagger 33¶
Dana Point 1
DATA 2
Del Mar 30¶
dundrel 55¶
E¶

For example, indexing has long been a vexing problem for even the most powerful applications. Even the best word processors, such as Word Perfect and Microsoft Word, bedevil their users with arcane methodologies for marking and generating indices—not to mention programs such as PageMaker, which takes a good stab at indexing but falls woefully short in areas such as page numbering, page ranges, and proper indexing of numeric entries. Indexing is so difficult in the PC world that it's even hard to explain the concept clearly.

FrameMaker has the fastest and most efficient manual indexing capability I've ever seen. When you decide to create an index, you must first mark each word or block of text you wish to include—as is true with virtually every other program on the market. Where FrameMaker shines is in its simplicity and efficiency. Enable the Marker dialog box and select Index when you're ready to do your text marking. A couple of mouse clicks and each entry's done. I generated an index for a 60-page book in a matter of minutes, with over a hundred entries (see illustration).

An index is treated just like any FrameMaker document, and can be formatted with style sheets (called, in FrameMaker as well as Ventura, "Tags"), and in any other fashion available. If you make substantial changes to your document, FrameMaker allows remarkable updating of an existing index associated with it. Simply ensure that your document is the active one and hit Generate. Your original index entries will be overwritten and updated—but all your formatting for non-index paragraphs such as titles and alphabetic headings will remain intact!

The subtleties of indexing—e.g. changing page number separators (from an en dash to a "-to-"), sorting according to the entire ASCII character set (with foreign language characters), and altering index entry marker text to accommodate pointers from one subject to another (such as "Lava, see Molten Magma")—don't escape this program. The last procedure in particular requires some work, but for serious indexing FrameMaker is supreme. It's a feature many reviewers have missed, and one of the most frequently avoided because of the complexities involved. FrameMaker is almost worth the price for this capability alone.

Another of FrameMaker's unusual features is Conditional Text, which allows the user to have multiple versions of the same document. Text which is present in one version of a document is conditionally tagged, setting it apart from the rest of the document, which is present in all versions. An example of such a document, aptly mentioned in other reviews of this product, is a school textbook comprising both student and instructor versions. Conditional text might be answers to homework questions at the end of each chapter, for example.

It's advisable to use spot color to help indicate conditional text (one of the better ways to use FrameMaker's very limited color capabilities). There are also some constraints. Don't insert any spaces between segments of conditional text, and also try to keep your tagged statements as short as possible. In this way, you can create multiple versions of one document without creating more than one actual file. It's like a very sophisticated form of Mail Merge on a word processor. You can create multiple versions of a resume without having a dozen inconvenient files to rummage through! In this way, FrameMaker is admittedly superior to a word processor. Graphics can also be conditional!

We don't have space to adequately discuss FrameMaker's substantial table features and its highly acclaimed equation editor, except to say that I've never seen so many mathematical symbols contained on a button bar, or accessible in such a logical way. Matrices, calculus symbols, Greek symbols, and diacritical marks, almost every conceivable type of relation, and many other mathematical layout symbols are available simply by selecting a math expression in your text and clicking a mouse button. Nothing I could do with my limited math knowledge could remotely push the capabilities of this feature.

Continued on page 113

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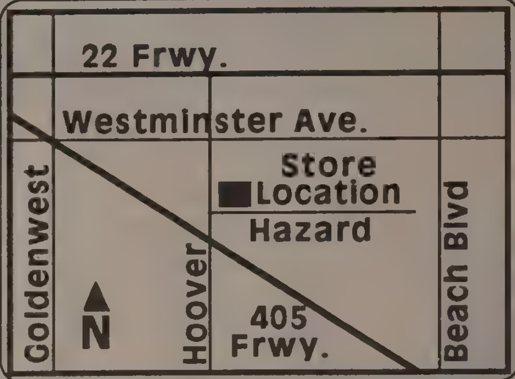

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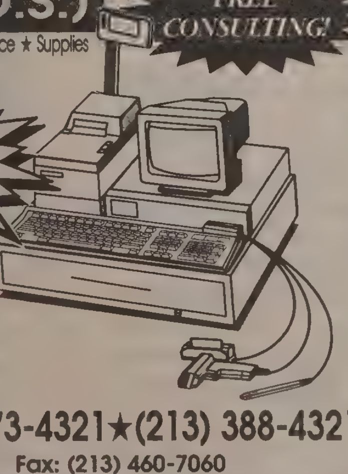

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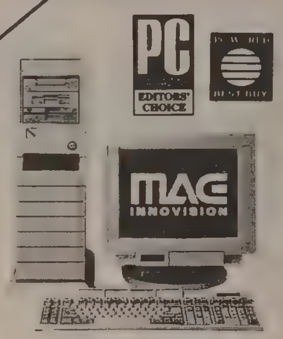

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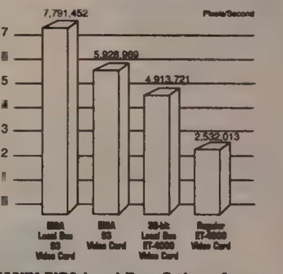

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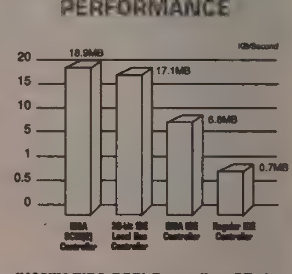

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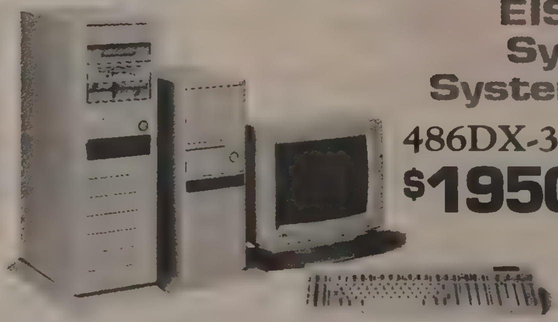

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It is not news that Windows has introduced some major changes in both the PC hardware and software areas. By the end of '92, for example, Windows software was poised for the first time ever to outsell DOS software, dollar for dollar. In the hardware arena, many owners of VGA displays have been disappointed running Windows even on a fast computer, because Windows adds lots of graphics overhead on any system.

When I visited Fall Comdex '92, I was struck by the sheer number of video cards that are tailored specially for Windows users. There are currently over two hundred video cards available or soon to be on the market. Windows accelerator cards are sometimes called video coprocessors because they take the Windows graphics drawing load off the main CPU (a 286, 386, or 486) of the computer, freeing it for other tasks. (Standard VGA cards are called frame buffer video cards, because their sole function is to receive bit-mapped data from the microprocessor as a buffer and send it to the computer screen.)

The key feature enabling Windows accelerators to perform their work is a special on-board chip, of which there are several competing designs. Companies offering special accelerator chips include S3 (currently the most popular), Weitek, IIT, Western Digital, Cirrus Logic, Tseng Labs, and ATI Technologies. They all work by transferring many of Windows' graphics drawing and text scrolling routines to hardware, thereby speeding up screen displays. Some chips, of course, are more effective than others. Windows accelerators also rely on special software drivers provided by the card manufacturer to activate the higher performance of their cards.

The first generation of Windows video cards began to hit the market two years ago. They were few and far between, and were generally too expensive for the average user. The offerings we're evaluating here, from Sigma Designs, STB Inc., Orchid Technologies, and Paradise (Western Digital), are all part of a second, faster and cheaper generation of cards, of which Windows users can take advantage for faster Windows displays. All of the offerings here list for $329 or less.

WHO'S ON THE BUS?

All the cards we're looking at are based on the 16-bit ISA bus design. Another prominent event this fall was the explosion of VESA Local Bus (VLB) products, both system motherboards and video cards, which promise even greater boosts in Windows throughput. Most of the cards in this review have VLB counterparts for a small price markup. I hope to deal with some VESA Local Bus products in a future issue.

Between the onslaught of inexpensive Windows cards and the sudden emergence of the VLB standard, it seems certain that the basic VGA frame buffer design is dying fast. Anyone with serious graphics needs—even as simple as creating 3-D graphs on a spreadsheet—will need faster video than the basic VGA design can provide, particularly under the Windows environment. It must be noted, however, that most Windows accelerators paradoxically speed up Windows at the expense of DOS performance! This is especially true for S3-based cards. Buyers should be aware of this when they decide on their purchase.

TEST SYSTEM

The test system used for evaluation is a 486-33 with 8MB of RAM, a 200MB hard disk, and two monitors: a Seiko CM1440 14" multisync, and a MAG Innovision 17" monitor supporting 1280 x 1024 resolution. All hardware is plain vanilla and industry standard. For the most part, the cards we'll be looking at are based on the S3 processor family. S3 Corp. manufactures several chips designed for inexpensive Windows acceleration. Sigma, STB, and Orchid all bear one or another of S3's line of chips. As we review each card, we'll go into more detail about the silicon. The sole exception is Western Digital's Paradise Accelerator for Windows, which bears the proprietary WD90C31 chip.

WINDOWS VIDEO CARDS

The Powergraph X-24

The Powergraph X-24 is a high-speed VGA card, designed for users who want a faster Windows screen. Using 1MB of 60ns DRAM, the Powergraph is based on the S3 86C801 accelerator chip, known as a fast and inexpensive offering of S3's line. Despite the card's low cost, the X-24 delivers an excellent value. The Windows video drivers provided with the card are not simply optimized to show good Windows video speed scores on standard benchmark programs—they actually enhance the performance of applications in Windows. In particular, text scrolling in word processing applications such as Word for Windows is very speedy, and graphics programs such as Aldus Freehand and Micrografx Designer perform screen redraws very efficiently. Based on my tests, the Powergraph X-24 is nearly five

continued

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Rich Grace is a free-lance and technical writer, and an enthusiastic user of PC, Mac, and Amiga platforms. He lives in Orange County. He can be reached on MCI Mail ID 484-6217.

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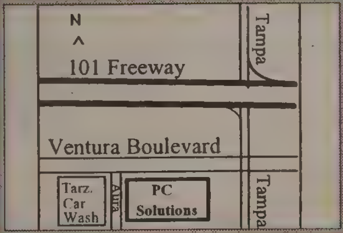

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It must be noted that most Windows accelerators paradoxically speed up Windows at the expense of DOS performance!...Buyers should be aware of this when they decide on their purchase.

times faster than the Diamond Stealth card, which was one of the fastest and most popular of first-generation Windows accelerators. When you install the Powergraph on a 386 or higher computer you'll immediately notice the improvement in performance. The Powergraph's documentation is thorough.

Some negatives: The Powergraph has three hardware jumpers which must be set for optimal operation. Some problems were also experienced with a few software drivers. In particular, the Microsoft Word for DOS driver failed completely on Microsoft Word 5.5, and several Windows 3.1 drivers initially reset my Seiko test monitor (but worked properly on the MAG Innovision). Overall, I enjoyed trouble-free operation. The 1024 x 768 and 1280 x 1024 pixel drivers, in particular, are sharp, fast, and appealing. For cash-strapped users wanting a Windows accelerator, the Powergraph X24 card provides an outstanding value.

Sigma Designs Legend GX

The Sigma Legend GX is a video card of fine workmanship and clean design. The hardware is virtually flawless, with no dip switches or jumpers to set. The card uses another S3 chip, the 86C924 (which is essentially a plug-in replacement for the older 86C911, the chip used by the Diamond Stealth, among many others). The GX relies on 1MB of video RAM (VRAM is a faster but more expensive alternative to DRAM, which is used on most of the cards reviewed here) for its image storage, and supports up to 32,768 colors in 640 x 480 VGA resolution. As with the other cards in this review, the Legend GX supports super high-resolution screens of up to 1280 x 1024 pixels for high-detail professional work (of course, you must have a monitor that supports such a high resolution). The documentation is complete, the software drivers for Windows and other applications install and work flawlessly, and the overall quality of the package is excellent.

Unfortunately, the Legend GX card's performance is mediocre, and though in all respects it is much faster in Windows than any frame-buffer VGA card, it suffers in comparison to other cards in this review. The Legend GX falls below the middle of the performance range, with the STB Powergraph X-24 and Fahrenheit VA (reviewed below) outperforming the Legend GX in most tests. In fact, the Legend GX is surprisingly slow in overall performance benchmarks compared to much of the competition. This is possibly temporary, as Sigma will likely be releasing Windows software drivers which may be faster than the current set. Most users will probably not notice the difference. The Legend GX is a well-designed, high-quality package, and wonderfully easy to install and use, particularly for users just getting their first accelerator card. Demanding users wanting every ounce of performance may want something else, though.

Orchid's Fahrenheit VA

The Fahrenheit VA is Orchid's second-generation successor to its popular Fahrenheit 1280 Windows accelerator. Relying on 1MB of standard DRAM and the S3 86C801 graphics chip, the VA offers high-speed Windows screen updates at up to 1280 x 960 resolution, plus a small microphone for voice annotation of Windows files. However, the Fahrenheit VA card does not share ease-of-setup qualities with the Sigma Graphics card. One problem is the VA's manual setup for screen refresh rates. Refresh rates determine whether or not a screen flickers (also called interlacing), or has a rock-steady image, at resolutions higher than VGA. In other words, the higher a rate is, the easier it is to look at a screen. Unfortunately, four switches on the back of this card (plus several jumpers which must be set for best operation) may create some difficulty for many users who just want to get up and running. (This is not unusual, however. Many Windows accelerators, including

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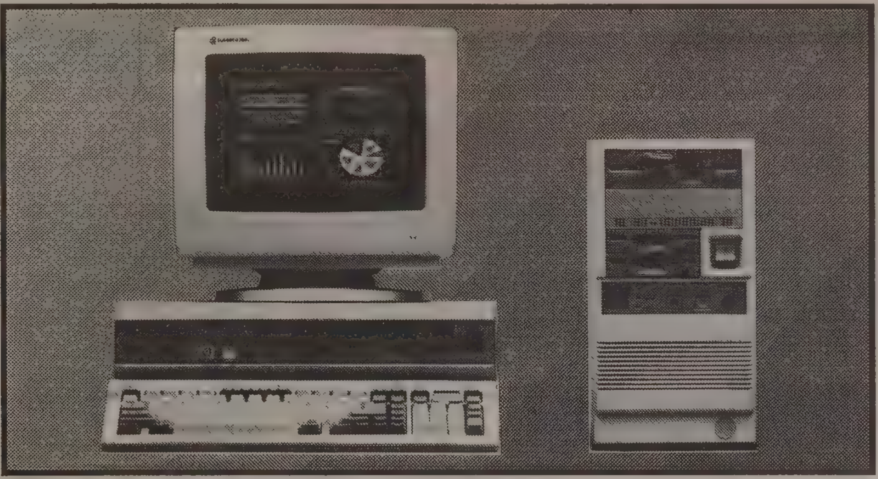

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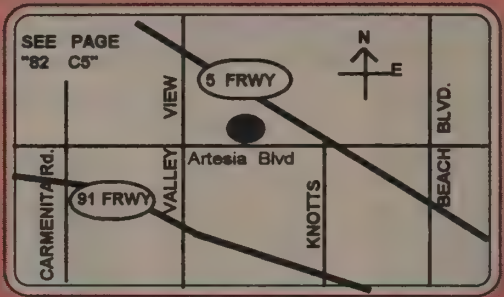

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the Paradise card reviewed below, use DIP switches in this way.)

Fortunately, for most users, it should not be necessary to adjust the Fahrenheit VA's jumpers or DIP switches. In fact, on my test 486-33 system, physical adjustments weren't necessary. Performance of the Fahrenheit VA in most applications is very quick; in my tests, the VA was about 5% slower than the Powergraph X-24—an insignificant speed difference. Text scrolling in Microsoft Word for Windows was slightly slower but still very smooth; redrawing of pictures in CorelDraw and Aldus Freehand was as fast as any other card in its price class. Software setup for the VA card is Windows-based; the driver is simple and elegant, and is accessible from the Windows Control Panel.

The highest resolution that the VA card currently supports is 1280 x 960 pixels in 16 colors; most competitors support 1280 x 1024 resolution. Orchid allows you to run your screens with either small fonts or large fonts for your menu bars and Windows title bars. Another small but nice feature is Orchid's voice annotation. A small microphone is provided with the card, which you speak into to provide voice messages for application programs (such as Word of Microsoft Excel) that support OLE. I'd recommend, for best results, that you have a sound card to get the most out of this feature. Despite some complexities in setup, the Orchid Fahrenheit VA is a quality product that delivers speedy Windows performance. Orchid is a name of quality in the computer industry, and this card continues that tradition.

> **Windows Accelerator cards are sometimes called video coprocessors because they take the Windows graphics drawing load off the main CPU (a 286, 386, or 486) of the computer, freeing it for other tasks.**

Western Digital's Paradise Accelerator for Windows

Paradise has been a longtime standard in the PC video card market. When Windows accelerators began appearing (with the advent of Windows 3.0) Paradise did not deliver a competing product until the fall of 1992. Based on Western Digital's proprietary WD90C31 chip, many users eagerly awaited Paradise's entry into this segment of the market. They'll probably still have to wait. The Paradise Accelerator comes out last in our Windows speed derby.

Let's first give Western Digital its due. Their Windows-based software driver installation is simple and straightforward, even more so than Orchid's. The card runs on 1MB of inexpensive 60ns DRAM, and comes with superb documentation. The Paradise card also supports resolutions of up to 1280 x 1024 in 16 colors, and offers high-color 800 x 600 support for Windows applications such as PageMaker and Ventura Publisher. Also, it's not necessarily fair to compare the Paradise card's speed with some of the more powerful cards in this article, because Western Digital's first effort relies on a 16-bit video chip, while all the others seen here use the latest 32-bit chips from S3.

Unfortunately, not only is Paradise's performance sluggish under Windows, but DIP switches and jumpers (as with the Orchid Fahrenheit VA) often must be set to cure display problems encountered during installation. Screen resolutions even at 1280 x 1024 and 1024 x 768 had a somewhat rough, jagged appearance. The Windows drivers also do not offer the "small fonts" and "large fonts" options available on other cards, which further adds to the crude appearance of high-res screens. Initially, I had to make adjustments on the card to make it work in my system, but after following suggestions offered by Paradise's excellent technical support (excluding specific memory segments in QEMM, setting DIP switches in certain ways, etc.), problems disappeared. Paradise will soon be releasing a card with a faster 32-bit video chip; this, combined with a more refined driver set, should go a long ways towards making Paradise a serious competitor. Regretfully, I must say that this product needs more work, but it's a good start. It's a bit behind the technical curve compared to the competition.

THE CLOSING PICTURE

Four cards do not even begin to provide an adequate overview of the choices available. Also, a card that causes trouble on one system (such as mine) may work swimmingly on another (such as yours). Test and evaluate cards carefully before you buy. It's unfortunate to have to issue negative reviews on any company's honestly supported product. Perhaps, however, some good will come of it, as companies strive to improve their offerings.

For now, I highly recommend the Powergraph X-24 card as a cheap, speedy card with good Windows drivers. I use it myself, and it's a real workhorse. For those who want a straightforward installation process and clean reliable hardware, the Sigma Designs Legend GX is a good bet. The Orchid Fahrenheit VA is also a can't-miss option for those who can spend a little more money. ■

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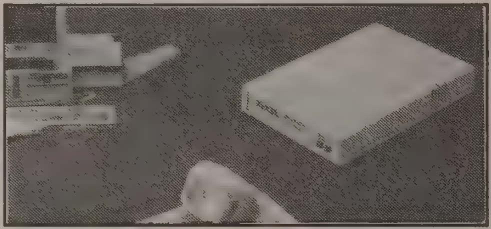

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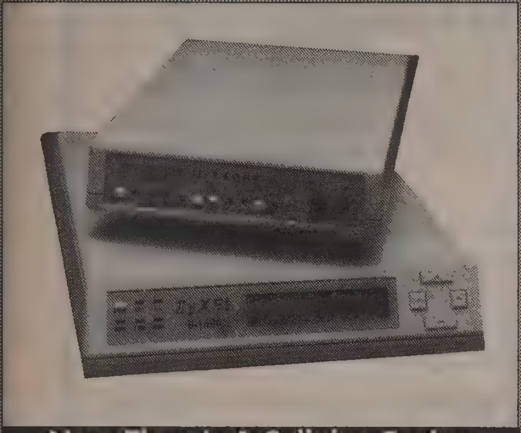

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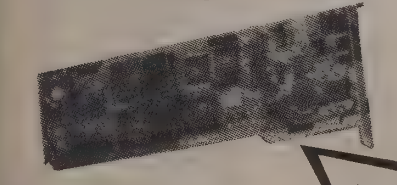

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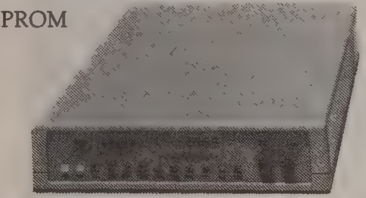

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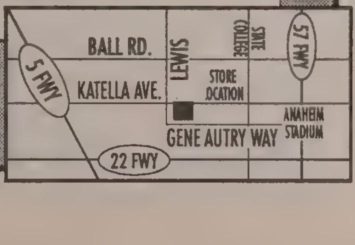


PRODUCT SPOTLIGHT

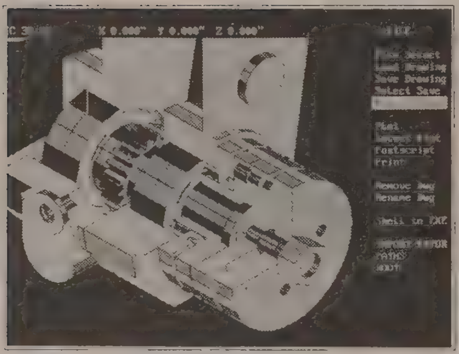
New Products

PC SOFTWARE

IDF IDENTIFILE

Viewing cryptic DOS 8+3 file names can become something of the past. Identifile is a fully featured file manager that can attach your own file description to any file name. You can permanently attach a 31-character description or comment to each filename. Scan a directory at a glance and know what each file contains. Identifile offers additional capabilities that make it stand out from a top file manager. It uses a novel user interface: using two cursors, one for commands, one for files, you can match files and commands faster. All commands are accessed by their first letter. It is also highly customizable and even allows you to have separate configurations for different users. ($59.95) Almax Software, Inc., 2000 Powell St., Ste. 1200, Emeryville, CA 94608. (510)601-620.

GENERIC 3D RELEASE 2



Generic 3D Release 2, Autodesk's three-dimensional conceptual modeling software, has the same interface as Generic CADD 6.0 2D design and drafting package. This makes it easier for DOS users to employ 3D as a conceptual design, visualization, and presentation tool. Enhancements to Generic 3D Release 2 include cursor alignment and tracking, sculpt mode, AutoCAD compatibility, nested commands, a large library of sample symbols, and other features. ($399. Upgrades are $75 for Generic 3D owners) Autodesk, Inc., Retail Products Division, 11911 N. Creek Pkwy. S., Bothell, WA 98011. 1-800-228-3601.

PRODUCT UPDATES

➤**AStar** is shipping **VisionMaster 1.5**, its groupware product designed to manage the creation and revision of documents on the Macintosh. AStar Technologies, Inc., PO Box 1100, Littleton, MA 01460. (508)486-8532.

➤**Claris** announced the availability of the **FileMaker Pro Translator**, a new utility that allows owners of Symantec's DOS-based Q&A 4.0 database program to easily transfer their database to FileMaker Pro for Windows. Claris Corp., 5201 Patrick Henry Dr., PO Box 58168, Santa Clara, CA 95052-8168. (408)987-7000.

➤**Fractal Design Painter v2.0** adds more than seventy new features, brushes, and functions for both Windows and Macintosh computers. Fractal Design Corp., 335 Spreckels Dr., Suite F, Aptos, CA 95003. (408)688-5300.

➤**In Focus** lowered prices of eight of its **LCD projection panels**. The reductions in suggested retail prices range from 6% to 25%. In Focus Systems, Inc., 7770 SW Mohawk St., Tualatin, OR 97062. (503)692-4968.

➤**Macromedia** simultaneously released **Authorware Professional 2.0 for Macintosh and Windows**. Macromedia, Inc., 600 Townsend, San Francisco, CA 94103. (415)442-0220.

➤**Revelar** released **ConstructionMac! 2.0** and **ConstructionPC! for Windows**. Revelar Corp., 772 E., 3300 S., Suite 100, Salt Lake City, UT 84106. 1-800-669-5191.

➤**SuperStor** introduced the **Communications Pak for Windows**. The bundle includes SuperStor PRO, a data compression utility; WinFax PRO, send and receive fax software; and Crosstalk for Windows, a data communications package. AddStor, Inc., 1040 Marsh Rd., Menlo Park, CA 94025. (415)688-0470.

REVIEWS

GAME REVIEWS

By Mike Markowitz

OXYD

Designed By: Meinolf Schneider
Published By: Dongleware
For: MS-DOS (640K, Hercules, EGA or VGA), Macintosh, Amiga, Atari ST, and NeXT
List Price: $39 for manual, $4.00 for program disk (Program can also be downloaded from many online services)

The life-giving Oxyds have closed up. Without the oxygen they emit, the entire maze-world (over one hundred landscapes!) is threatened. Your task is to use the mouse to guide a black marble through the mazes. When an Oxyd is touched by the marble it opens up, revealing a hidden pattern or color. Two Oxyds in each landscape carry the same pattern. If you make a match, they both stay open; if not, the first closes up again. If you open all the Oxyds in a landscape, you advance to the next level.

On the surface, Oxyd resembles that old memory game "Concentration." But things get more interesting as you

Continued

advance deeper into the maze. Objects have to be moved and puzzles solved. Laser beams can be reflected by strategically placed mirrors to touch an Oxyd. You have to avoid Skulls and flying Rotors than can destroy your marble on contact.

The MS-DOS version we reviewed came on a single high-density 3.5" disk. After installation, the program took less than 1MB of hard disk space. There are separate executables for each video mode, so you only need to install the ones you need. The EGA version ran in monochrome, for maximum resolution. The "Read-me" files and the program's online instructions are available in English, French, and German. A two-player version can be played over a modem, as long as both computers are of the same kind.

Graphics and Animation: 9
Sound: 9
User Interface: 9
Overall Value: 9

Oxyd strikes a nice balance between hand-eye coordination and mental puzzle solving. The graphics are attractive and the animation is very smooth. The code was written in Modula-2, and refined over a period of ten years (!) largely for the German Amiga community, where games are taken very seriously indeed.

Dongleware has devised a unique distribution method. The program can be freely distributed, and may be downloaded from CompuServe, GEnie, Delphi, the Internet, and many BBSes, but to access anything beyond the first ten introductory levels you have to enter a code from The Oxyd Book, which can be ordered for $39 plus $3 shipping and handling. (Dongleware, Inc., 35 Howard St., Cambridge, MA 02139-2909. 617/497-1130)

YEARN 2 LEARN: PEANUTS

Designed By: Noriko Kamei
Published By: Image Smith
For: Macintosh (4MB RAM, 13" or larger color monitor, system 6.07 or higher)
List Price: $64.95

"Everyone complains about the lack of quality software required to drive the multimedia industry," says Image Smith's president, Dominique Claessens. "By licensing popular cartoon characters, we have a higher product cost, but we feel it is warranted by the way our licensed characters engage a child in learning activity while having fun."

Yearn 2 Learn: Peanuts is the first in a projected series of educational multimedia software packages. It includes five separate activities, designed for learners aged 3 to 10 years.

Interactive Comic Strips are five Peanuts episodes, with excellent voice narration. You can click on an individual word to hear it spoken. Each frame contains hidden "hot spots" that trigger audio or animation special effects.

Math Games have three levels of difficulty that range from simple counting to addition and multiplication.

Geography Games are based on scrambled jigsaw puzzles of the forty-eight contiguous states, divided into four regional groups. You have to click and drag each state into the proper location, where it will snap into place. For a few dollars, you can get a real jigsaw puzzle in any toy store that does the same thing more effectively.

The Coloring Book is the best software implementation of this idea that I have ever seen. When you click to select a crayon, the program speaks the name of the color. You can draw or erase in five brush sizes. The black outlines are on a separate graphic "layer," so they always show through the colors.

The Flying Ace game teaches hand/mouse coordination by letting you pilot Snoopy's dog house through an aerial obstacle course of mountain peaks and balloons. The collision-detection algorithm is too unforgiving for a kid's game—if you intersect by even one pixel, you crash.

The program requires a whopping 11MB of hard disk space. It is installed from compressed files on four high-density disks. The program was apparently developed in

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Graphics and Animation: 9
Sound: 9
User Interface: 6
Overall Value: 7

Macromind Director. There are noticeable delays (even on a maxed-out Mac IIci!) when switching between program activities, and the software displays cute "Please Wait" still frames during the transitions. A CD-ROM version, clearly more suitable for such quantities of animation and sound, is under development. A well-illustrated 32-page manual documents all the features of the software in a way that linear-minded grown-ups can understand, but any kid could probably discover all the options by diligently fooling around with it for a few hours.

The packaging consists of a box shaped like Snoopy's dog house, a nonstandard size and shape that will surely irritate retailers desperate for shelf space.

It is unusual to see a program designed for home and school use that so completely ignores the hardware limitations of the installed base of home and school computers.

You must have a 13" or larger monitor to run Peanuts. Most of the Mac LC systems in homes and schools have the affordable little 12" monitor, which can only display about 63% as much information. If this were a program that relied on high-resolution scanned images of complex graphics, this might be a reasonable design decision; but Good Grief, these are cartoon characters! (Image Smith, Inc., 1313 West Sepulveda Blvd., Torrance, CA 90501. 310/325-1429 or 415/292-3542)

THE LOST TRIBE

Designed By: Steve Vance and Frank Andrews
Published By: Lawrence Productions
For: MS-DOS (640K, VGA/MCGA graphics, mouse optional, supports AdLib and Sound Blaster audio), Macintosh and Apple IIGS versions also available
List Price: $39.95

The Lost Tribe simulates leadership and survival in a band of Ice Age hunter-gatherers. Your homeland has been destroyed by a volcano, and you must lead twenty-three hungry and cranky survivors on a quest to find ancestral hunting grounds, far to the east.

To guide you, the ancestors left a Sacred Mapskin, which fills the center of the screen. Each terrain hexagon on the map represents one or two day's travel through forest, plains, mountains, river valleys, lakes, hills, and deserted villages. The Survival Rock and the Status Rock (on the left side of the screen) display symbols that indicate how well you are doing. Winter is coming on, and you must find your new home before snowfall makes travel impossible.

There are six scenarios of increasing difficulty. In the hardest scenarios, most of the Mapskin is an unexplored blank.

Random events challenge you with multiple-choice dilemmas. Make wise decisions and your Leadership Rating will increase. Make enough bad decisions, and the tribe will banish you, ending the game. Politics hasn't changed much in ten thousand years.

You decide each day whether to hunt, gather roots and berries, travel, rest, feast, practice spear-throwing, send out scouts or make carvings to boost your spiritual energy. Your performance in hunting appears as humorous stick-figure animations in the style of cave wall paintings.

The user interface makes intelligent use of the right mouse button to zoom the map to full-screen and display explanations of various pictograms. An online reference guide includes personality profiles of your companions; notes on land forms, tools, and animals and discussions of values, customs, and rituals shared by tribal peoples. The 18-page manual includes complete instructions and a bibliography. There are no screen shots, unfortunately.

The package includes high-density 5.25" and low-density 3.5" disks. The program files occupy about 4.7MB of disk space after installation.

Graphics and Animation: 8
Sound: 7
User Interface: 7
Overall Value: 8

The Lost Tribe teaches kids about the lives of our distant ancestors, while developing such skills as map reading, leadership, problem solving, and conflict resolution. The program has a sense of humor and humane values, although hard-core academics might object to the New Age mysticism apparent in some of the reference guide topics. (Lawrence Productions, Inc., 1800 South 35th St., Galesburg, MI 49053. 1-800-421-4157)

MACINTOSH HARDWARE

GCC WRITEMOVE II

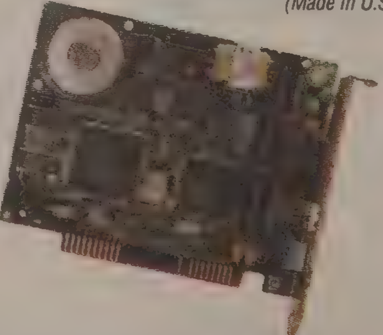
Manufactured By: GCC Technologies
List Price: $599
Reviewed By: Mike Markowitz

Thermal fusion is usually associated with hydrogen bombs, but Japan's Citizen company invented a nonexplosive "PN48 thermal fusion print engine" which GCC has packaged into a tiny printer aimed at the upscale PowerBook market.

WriteMove II measures 2" wide, 11.5" long, and 3.5" deep. It delivers resolution of 360 x 360 dots per inch (dpi) in a single pass. With its NiCad battery (7.2 volts at 900 milliamps) it weighs 2.5lbs. You can print about twenty typical pages on one charge. The battery needs six hours to recharge, and survives about six hundred recharge cycles before needing replacement.

A separate 120 V power adapter has prongs that fold down for easier storage (nice design feature). GCC also sells 100V (Japan) and 220V (Europe) adapters for world travelers. A special serial cable connects to the modem port of your Mac. You can feed paper from the rear, or through a slot in the bottom of the printer. I got excellent results printing on inexpensive "computer paper" and standard

Continued on page 86



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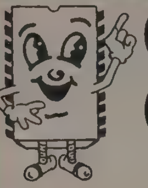

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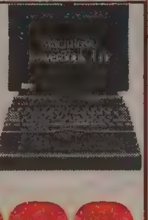

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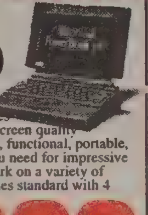

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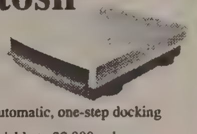

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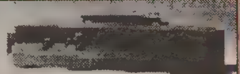

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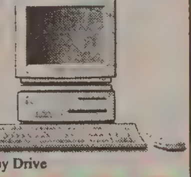

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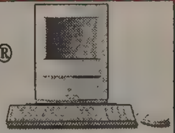

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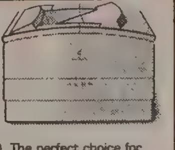

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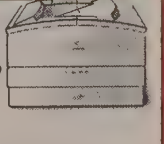

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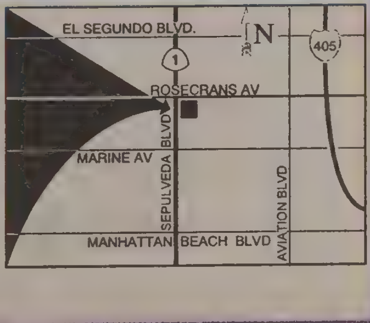

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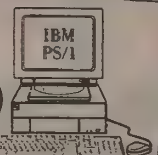

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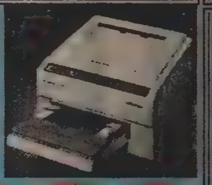

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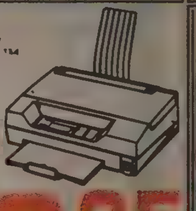

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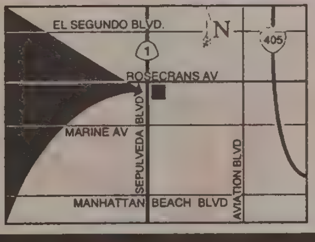

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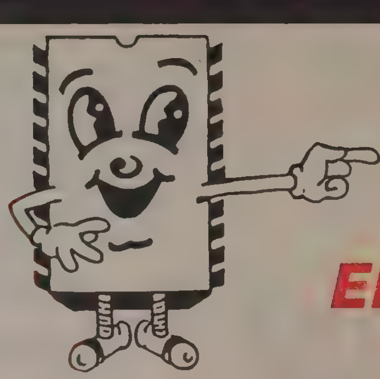

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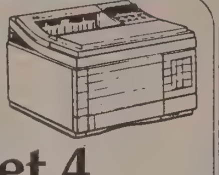

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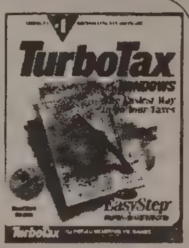

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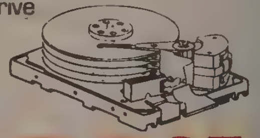

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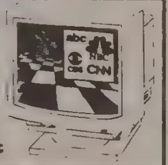

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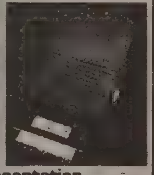

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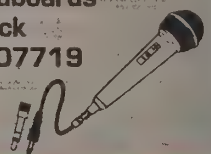

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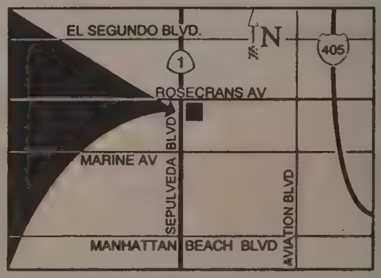

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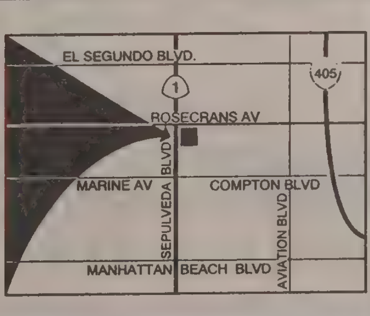

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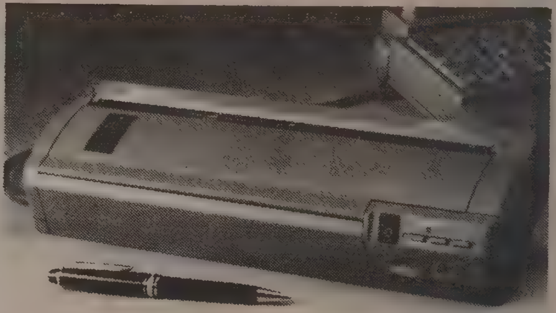
photocopier paper. Unlike output from an ink jet printer, thermal fusion ink does not bleed or smear if the paper gets wet. The top-quality single-strike ribbon cartridge is rated at 35,000 characters, but the multi-strike cartridge, rated at 100,000 characters, provided sharp, clear text.



WriteMove II is lightweight hardware supported by heavyweight software. The package includes three 800K disks, with a customizable installer. Along with a Chooser-selectable print driver, you get Adobe Type Manager and a set of Type 1 fonts. For bit-mapped graphics, or non-Type 1 fonts, WriteMove II relies on QuickDraw, and the results, at 72dpi, were predictably jaggy. The software creates a Print File Folder on your hard drive, where it temporarily stores each page image before spooling it to the printer. Each page is processed individually; it took about twenty minutes to print an 11-page document. You need System 6.07 or higher. Since most PowerBook users are short on disk space, I did a minimal installation (just one font) with good results.

For PowerBook users who need to have access to hardcopy wherever they might be, the WriteMove II is a stylish but pricey solution. However, it's definitely easier than strapping a LaserWriter to your back and carrying a long, long extension cord. (GCC Technologies, Inc., 580 Winter St., Waltham, MA 02154. 1-800-422-7777)

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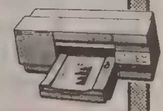

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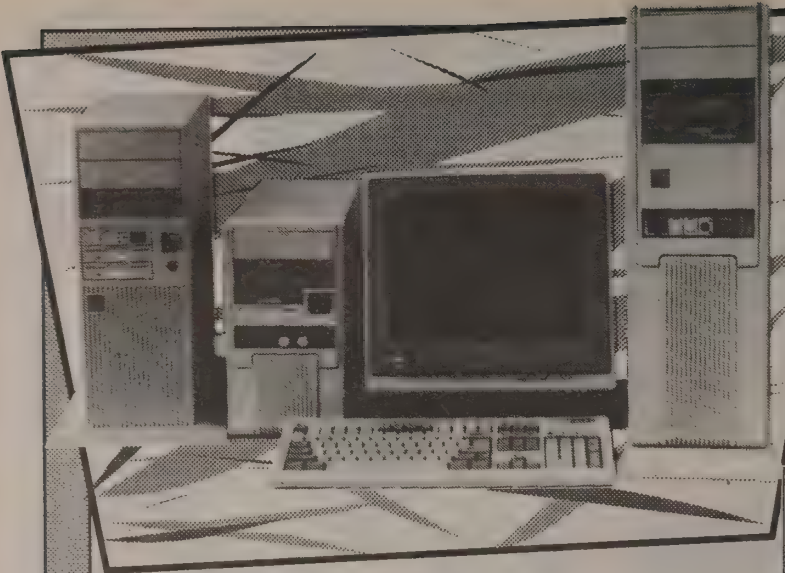

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Continued from page 86

crooked. Earth's axis of rotation is tilted 23.5 degrees relative to the plane of our orbit around the sun. If this had not happened, there would be no seasons, and every day and night would be exactly the same length. Winter mornings would not be any darker or colder than summer mornings, and it would be that much easier to get out of bed.

Small Blue Planet
The Chronosphere
Version 1.0
Now What Software
© 1992 San Francisco, California

The Chronosphere is a spectacular little Macintosh application that gives you a global perspective on day and night. A dynamic full-screen world map displays the line of demarcation between day and night; sunset on the leading edge and dawn on the trailing edge. On the Mercator projection, this line looks like a sine wave, so there is also an inset view of the rotating globe, which shows the correct perspective as the straight line of nightfall advances across the face of the planet. You can click anywhere on the globe and the program displays the current time.

Documentation consists of a well-designed and entertaining leaflet. The program has several screens of online Help. There are detailed notes on the sources used to develop the maps, including satellite imagery from the National Oceanic and Atmospheric Administration (NOAA) and Defense Mapping Satellite Program.

The program is installed from a single high-density floppy and takes up 1.67MB on disk. It requires 8-bit color (256 colors). Your system should have at least 4MB of RAM, although the "Get Info..." box says that Chronosphere will run in 2.4MB. It ran perfectly on a Mac LC with no math coprocessor.

Chronosphere is actually a small standalone module from a much vaster project: Small Blue Planet, a $199 CD-ROM based world atlas. (Now What Software, Inc., 2303 Sacramento, San Francisco, CA 94115. 415/885-1689. Fax: 415/567-0432)

JUST JOKING

By: Ronald L. Smith, Jon Winokur, and others
Published By: Wordstar International
For: Macintosh (1MB, System 6.05 or later)
List Price: $49
Reviewed By: Mike Markowitz

Long, long ago, WordStar was the leading word processor for personal computers. For a few bad years the company fell upon hard times, but recently it has been making a comeback as a publisher of tools for writers. Humor can sometimes be one of the most useful tools in a writer's bag of tricks. Just Joking, a topical database of classic and contemporary American humor, just might fill the bill.

Just Joking is a HyperCard stack of 678K that includes nearly three thousand items in over 250 categories. Each category listing is one big scrolling field. You can select and copy any of the text. You can add your own jokes and topics, and have the program include them in the Index. The package also includes a disk with HyperCard 2.1 for those Mac users who have been in a coma or cryogenic suspension for the past two years. For technical and corporate-political reasons that would be tedious to recount, HyperCard has lost much of its charm as a development environment for Mac software, but it has the great advantage of being universally available, and it runs on even the most frugally configured systems.

The list of topics includes Cats and Dogs but not Computers. Just Joking earns points in my book for having plenty of quotes from the works of P.J. O'Rourke and Fran Lebowitz, whom I consider to be our funniest living writers. It loses points for having only a few one-liners from Stephen Wright and George Carlin, our greatest stand-up comics.

Continued on page 96

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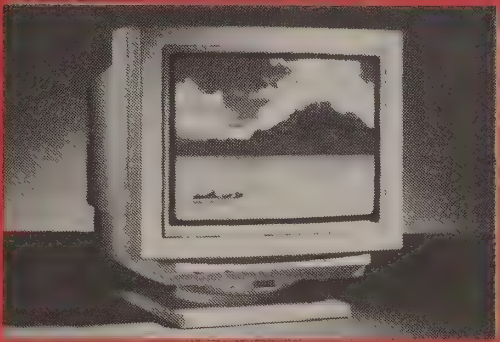

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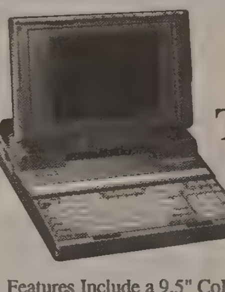

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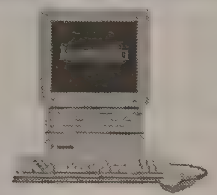

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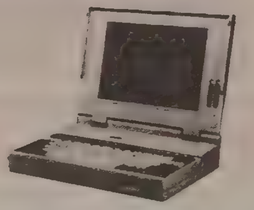

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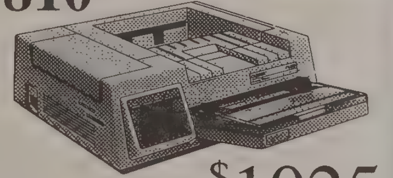

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Continued from page 90

The 10-page user manual is a model of brevity and good design. The simple instructions are also included in an online Help menu item. The box also contained a fake pair of glasses with huge nose, moustache, and bushy eyebrows.

The stack is indexed by topic and author, and you can search for any text string. This makes it rather more useful than a book. A really useful product would be a comprehensive CD-ROM based encyclopedia of humor. Perhaps WordStar ought to consider such a project; it would certainly find buyers. (WordStar International. Inc., 201 Alameda del Prado, PO Box 6113, Novato, CA 94948. 1-800-523-3520)

MAGNET

Published By: No Hands Software
List Price: $129.95
Reviewed By: Matthew Leeds

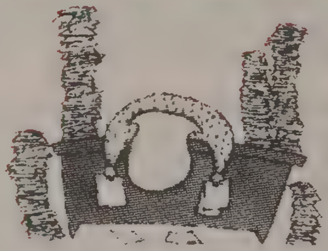
Magnet is billed as "the first intelligent agent-based software." While limited in scope, it does fulfill its goal of automating many file handling tasks. Magnet consists of an extension and an application. Although Magnet requires System 7, installation is easy; either run the installer or drag the extension to the System folder and the application anywhere.

Magnet's name comes from the "agents" it creates to control its functions. A Magnet agent is essentially a set of instructions that identifies the types of files that will be found, when to find them, and what to do with them. Files can be searched for by name, type, location, contents, date modified, date created, label, and size. Within each category a variety of filters allows you to narrow and specify the characteristics you're looking for. While there is a great range of filters included, there is no mechanism for adding additional ones. For example, you can't search by creator flag unless you've got the application that uses Magnet's set of creator flags.

You can schedule your Magnets to run (or trigger as the manual refers to their activation) by a date and time or by the mounting of a volume, when your computer has been idle for a period of time, or at shutdown. Once an agent is triggered, it can do one of three things: create an alias of a file, copy a file, or move a file. It can't extract text from a file or change a file's creator flag. I'd like to see it be able to rename or delete files as well as see support for AppleEvents added.

Magnet can do a lot of other things. It can back up specified files when you want them backed up, for example, when you mount a SyQuest cartridge. It can synchronize the files on your PowerBook and your desktop Mac. It can log onto a network drive (or remote network using AppleTalk Remote Access) and retrieve files. It can hunt through a network drive and find all the files that haven't changed in a specific period of time (letting a network manager find files ripe for archiving and deleting).

Magnet is a good first-generation product for creating automated events on the Macintosh. It cleverly avoids the scripting environment of Frontier, making it accessible to a greater audience; but in the process it looses some flexibility and expandability. If No Hands Software continues to add new features to Magnet, it could become an indispensable addition to everyone's collection of utility software. (No Hands Software, Inc., PO Box 60297, Palo Alto, CA 94306. 415/321-7340) ■



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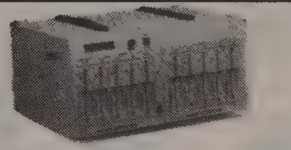

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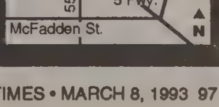

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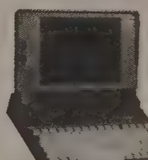
- * 256K High Speed Cache
- * 4MB Memory onboard expandable up to 128MB
- * TEAC 1.2M & 1.44M FDD
- * 32-Bit DTC2290 EISA IDE Controller
- * 32-Bit Orchid IIs-E 1MB EISA VGA Card
- * 2 Serial / 1 Parallel / 1 Game
- * CS-35 Mini-Vertical Case
- * 230 Watts UL Power Supply
- * Enhanced 101 Keys Keyboard



NoteBook *(BlackSeries)*

386SXL-25	$1290
386DX-33	$1430
486SLC-25	$1480
486DX-33	$1960
486DX-33 Color	$2640

- * 9.5" High contrast Mono VGA CCFT backlight display, 64 gray scale, 8.5" Passive matrix Color VGA LCD display for color model
- * 1 Parallel, 1 Serial, External keyboard connector, External CRT connector, 1 Bus expansion pack connector (for modem, network, etc.), 2 Battery packs included
- * One 3.5" 1.44MB internal FDD
- * 80MB HDD (120MB & 200MB available)
- * 2MB for 386SXL-25, 4MB for 386DX-33, 486SLC-25, 486DX-33 & 486DX-33 Color
- * Autoswitching AC adapter, Carrying case

Made in USA

VEGAISABus

486DX2-66V	$1185
486DX-50V	$1075
486DX2-50V	$1015
486DX-33V	$890
486SX-25V	$740
386DX-40V	$640
386DX-33V	$640

- * VEGA 3486DX ISA M/B
- * 256K High Speed Cache
- * 4MB Memory onboard expandable up to 32MB
- * TEAC 1.2M & 1.44M FDD
- * 2 Serial / 1 Parallel / 1 Game
- * CS-35 Mid-Vertical Case
- * 230 Watts UL Power Supply
- * Enhanced 101 Keys Keyboard

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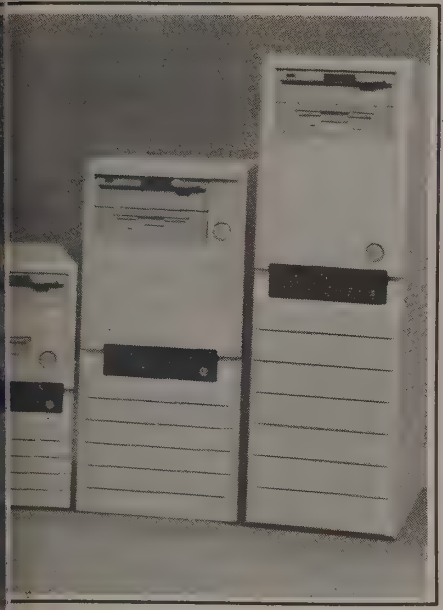
Fountain Valley, CA92708



Essence486 VESAEISALocalBus

VESA 486DX2-66HLB	$1350
VESA 486DX-33HLB	$1060

* HINT486DX EISA Local Bus M/B
* 256K High Speed Cache
* 3 EISA Bus, 2 VESA Local Bus
* 4MB Memory on board expandable up to 32MB
* TEAC 1.2M & 1.44M FDD
* 32-Bit VESA Local Bus IDE Controller
* 32-Bit 1MB VESA Local Bus VGA Card
* 2 Serial / 1 Parallel / 1 Game
* CS-35 Mid-Vertical Case
* 230 Watts UL Power Supply
* Enhanced 101 Keys Keyboard

Essence486 VESALocalBus

VESA 486DX2-66LB	$1285
VESA 486DX-33LB	$990

* VESA Local Bus 486DX M/B
* 256K High Speed Cache
* 4MB Memory on board expandable up to 32MB
* TEAC 1.2M & 1.44M FDD
* 32-Bit VESA Local Bus IDE Controller
* 32-Bit 1MB VESA Local Bus VGA Card
* 2 Serial / 1 Parallel / 1 Game
* CS-35 Mid-Vertical Case
* 230 Watts UL Power Supply
* Enhanced 101 Keys Keyboard

ViewSonic 15

The award-winning family of ViewSonic monitors now includes the **New Generation** ViewSonic 15. It features **ViewMatch** color control along with exceptional clarity and brilliance. And, with the ultra high **76Hz refresh rate at 1024x768**, the multifrequency monitor provides the user with a complete flicker free image.

With its larger flat square screen, the monitor offers a beautiful display with a full edge-to-edge crisp, glare-free image. The new ergonomically designed drop-down control panel makes it extremely easy to adjust size, position, color and pin-cushioning.

In keeping with today's concern for a safer environment, the ViewSonic 15 meets strict Swedish MPR-II low radiation standards. And, for home use, it is FCC Class B approved.

$625

Essence486Series

486DX2-66	$1080
486DX-50	$955
486DX2-50	$945
486DX-33	$795
486SX-25	$650

* 486DX/SX M/B
* 256K High Speed Cache
* 4MB Memory on board
* TEAC 1.2M & 1.44M FDD
* IDE FDD & HDD Controller
* 2 Serial / 1 Parallel / 1 Game
* CS-932 Mini-Vertical Case
* 230 Watts Power Supply
* Enhanced 101 Keys Keyboard

Essence386Series

386DX-40	$505
386DX-33	$505
386SX-40	$380
386SX-33	$365

* 386DX-40/33 SX-40/35 M/B
* 128K High Speed Cache (0K for SX-40 & SX-33)
* 4MB Memory on board (2MB for 386SX)
* TEAC 1.2M & 1.44M FDD
* IDE FDD & HDD Controller
* 2 Serial / 1 Parallel / 1 Game
* CS-932 Mini-Vertical Case
* 230 Watts Power Supply
* Enhanced 101 Keys Keyboard

Essence486DLC

486DLC-40	$670
486DLC-33	$635

* 486DLC M/B
* Cyrix 486DLC Microprocessor
* Math Coprocessor
* 128K High Speed Cache
* 4MB Memory on board
* TEAC 1.2M & 1.44M FDD
* IDE FDD & HDD Controller
* 2 Serial / 1 Parallel / 1 Game
* CS-932 Mini-Vertical Case
* 230 Watts Power Supply
* Enhanced 101 Keys Keyboard

Star Moon Star WILD Multi-Media Upgrade Kit

Upgrade Kit included:

SONY CDU-31A CD-ROM

- The lastest CD-ROM from SONY, 680MB capacity, 64KB buffer size, 150KB data transfer rate, 490ms access speed, built-in caddy for ease of use

Sun Moon Star Stereo Sound Board

- MPC, Ad Lib, and Sound Blaster Pro Basic compatible
- Stereo Digital/Analog mixer for stereo audio sources: DAC, FM, microphone, line-in and CD
- Sampling with 8-bit stereo DACs and ADCs selectable sampling rates: 4 - 44.1 KHz
- 20-voice, 4-operator OLP3 FM synthesier
- Built-in MIDI interface for music and sound creation
- Standard PC joystick port
- Microphone Automatic Gain Control (AGC) amplifier
- Output power amplifier with volume control
- Built-in interfacefor SONY CDU-31A

Bundled Multimedia CD titles including:

- Multimedia Encyclopedia '92
- World Atlas
- U.S. Altas
- Chessmaster 3000
- Mavis Beacon Teaches Typing V.20

$425

Upgrade Options

For ISA Systems:

14" Infiniti IN8339SV Super VGA Monitor (.39dp) w/TVGA-8900CL 1MB VGA Card	$285
14" Infiniti IN8828N4 Non-Interlaced Monitor (.28dp) w/TVGA-8900CL 1MB VGA Card	$365
14" AcerView 11 VGA Color Monitor (.39dp) w/16-bit VGA Card (256K)	$255
14" AcerView 33D Super VGA Color Monitor (.28dp) w/TVGA-8900CL 1MB VGA Card	$340
14" AcerView 34T Non-Interlaced Color Monitor (.28dp) w/TVGA-8900CL 1MB VGA Card	$370
15" AcerView 56L Digital Auto-Tracking Flat-Screen Monitor w/Orchid Fahrenheit 1MB Graphics Accelerator	$645
14" CTX-5468A Super VGA Monitor (.28dp) w/TVGA-8900CL 1MB VGA Card	$340
14" CTX-5468NI Non-Interlaced Color Monitor (.28dp) w/TVGA-8900CL 1MB VGA Card	$365
14" CTX-1461 Digital Auto-Tracking Monitor (.28dp) w/TVGA-8900CL 1MB VGA Card	$385
15" CTX-1560 Digital Auto-Tracking Monitor (.28dp) w/Orchid Fahrenheit 1MB Graphics Accelerator	$610
17" CTX-1760 Digital Auto-Tracking Monitor (.28dp) w/Orchid Fahrenheit 1MB Graphics Accelerator	$970
14" ViewSonic 6E Non-Interlaced Color Monitor (.28dp) w/TVGA-8900CL 1MB VGA Card	$385
14" ViewSonic 5E Non-Interlaced Color Monitor (.28dp) w/TVGA-8900CL 1MB VGA Card	$445
15" ViewSonic 6FS Digital Auto-Tracking Flat-Screen Monitor w/Orchid Fahrenheit 1MB Graphics Accelerator	$690
17" ViewSonic 7 Digital Auto-Tracking Monitor (.28dp) w/Orchid Fahrenheit 1MB Graphics Accelerator	$1120

Hard Disk Subsystem & Other Options (w/Systems):

40MB IDE HDD	$145
80MB IDE HDD	$195
120MB IDE HDD	$220
170MB IDE HDD	$248
200MB IDE HDD	$308
240MB IDE HDD	$320
340MB IDE HDD	$465
520MB IDE HDD	$820
Promise IDE Caching Controller w/2MB	$185
MicroSoft DOS 5.0	$35
MicroSoft Windows 3.1 w/Mouse	$55
Internal 2400 Buad Data Modem	$32
Internal 9600/2400 Baud Fax Modem	$58
Internal 14400/14400 Baud Fax Modem	$195
Mitsumi CRMC Intrernal CD-ROM	$199
Sony CDU-31A Internal CD-ROM	$245
Sound Blaster Pro (Basic Version)	$138
Media-Vision Pro Audio Spectrum 16 Sound Card	$180
Orchid Sound Producer Pro w/Speaker & Mic	$149
Power Center (UL)	$16
Creative Lab Multimedia Starter Kit -Panaonic Internal CD-RoM (390ms) -Sound Blaster Pro Basic -Six CD Titles: Microsoft Bookshelf, SB Voice Editor FM Intelligent Organ, SB Talker, CD-Music Player, and MMPlay	$425

For EISA & Local Bus Systems:

ViewSonic 6E 14" Non-Interlaced Monitor	$325
ViewSonic 5E 14" Non-Interlaced Monitor	$385
ViewSonic 6FS 15" Digital Non-Interlaced Monitor	$525
ViewSonic 7 17" Digital Multi-Frequency Monitor	$955
ViewSonic 8 20" Digital Multi-Frequency Monitor	$1560
AcerView 34T 14" Non-Interlaced Monitor	$310
AcerView 56L 15" Digital Non-Interlaced Monitor	$480
AcerView 76i 17" Digital Non-Interlaced Monitor	$885
CTX-1461 14" Non-Interlaced Monitor	$325
CTX-1560 15" Digital Non-Interlaced Monitor	$445
CTX-1760 17" Digital Non-Interlaced Monitor	$805
MAG 1564 15" Digital Non-Interlaced Monitor	$480
MAG 15H 15" Digital Non-Interlaced Monitor	$555
MAG 17H 17" Digital Non-Interlaced Monitor	$995
Optiquest 1500D 14" Digital Non-Interlaced Monitor	$375
Optiquest 2000DX 15" Digital NI Monitor	$498
Optiquest 4000DX 17" Digital NI Monitor	$735

Memory Upgrade:

4MB (386SX)	$75
8MB (486DX/SX, 386DX)	$150
16MB (486DX/SX, 386DX)	$480

Tape Backup:

Hi-Lite (Archive) 250MB Tape Backup	$189
Colorado DJ-10 120MB Tape Backup	$159
Colorado DJ-20 250MB Tape Backup	$209
Colorado JT-10 120MB Parallel Tape Backup	$355
Colorado JT-20 250MB Parallel Tape Backup	$420

Mitsumi CD-ROM Model: CRMC

- MPC compliant
- 630MB Capacity
- 350ms access time
- 175KB data transfer rate
- comes with 16-bit interface cards & cable

$199

For more parts see listings on next page ➢

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For systems see list on front pages

COMPLETE NETWORK SOLUTION, PLUG & PLAY.....

IN ESSENCE, WE ONLY USE QUALITY NETWORK PRODUCTS INCLUDED:

Network Cards: **Eagle, Intel, Accton, 3COM, SMC, Thomas-Conrad**
Controllers: **Always, Adaptec, DTC, Future Domain, UltraStor**
Hard Disk: **Conner, Fujitsu, Maxtor, Micropolis, Seagate, Storage Dimension**
Uninterruptible Power Supply: **American Power Conversion, Tripp-Lite**
Tape Backup: **Colorado Memory System, Maynard/Archive, Mountain, Summit Express, Tecmar, Wangtek**

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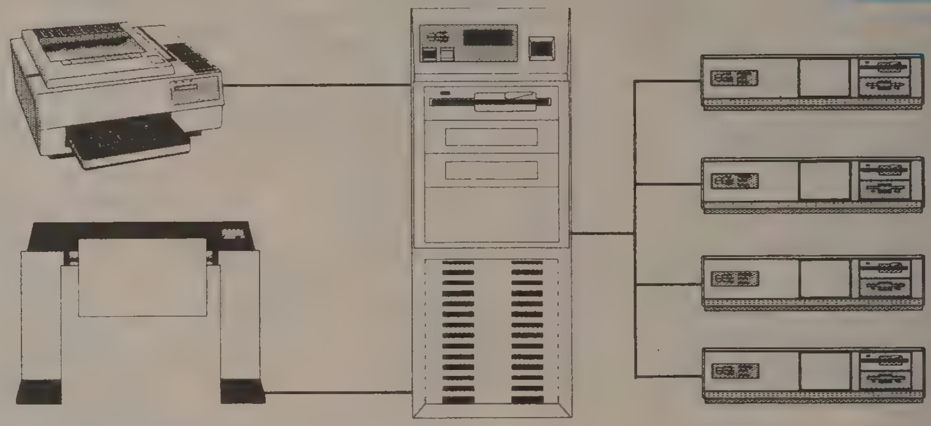
FILESERVER:
ESSENCE 486DX-33MHz System
- VEGA 486DX-33MHz M/B
- 256K High Speed Cache
- 8MB Memory expandable to 32MB
- TEAC 1.2M & 1.44M FDD
- Always IN-2000 SCSI Controller
- Maxtor 535MB SCSI HDD
- 14" MonoVGA Monitor w/VGA Card
- 2 Serial / 1 Parallel Ports
- Full size Tower Case w/300Watt PS
- Dual fan for efficient cooling
- Enhanced 101 Keys Keyboard
- Intel EtherExpress 16-bit Ethernet Card
- Pre-loaded with Novell 3.11 Software

5 User Filesever $3195.00
10 User Filesever $3965.00
20 User Filesever $4495.00



Please call for different configurations for Fileserver or workstations.

WorkStation:

ESSENCE 386DX-40MHz System
- 386DX-40MHz M/B w/64K Cache
- 4MB Memory
- TEAC 1.2M & 1.44M FDD
- 14" SuperVGA Monitor w/1MB VGA Card
- 2 Serial / 1 Parallel Ports
- Mini Tower Case w/230Watts PS
- Enhanced 101 Keys Keyboard
- Intel EtherExpress 16-bit Ethernet Card

$995 per station

ESSENCE 386SX-33MHz System
- 386SX-33MHz M/B
- 2MB Memory
- TEAC 1.2M & 1.44MB FDD
- 14" VGA Monitor w/256K VGA Card
- 2 Serial / 1 Parallel Ports
- Mini Tower Case w/230Watts PS
- Enhanced 101 Keys Keybaord
- Intel EtherExpress 16-bit Ethernet Card

$695 per station

At Essence, we provide you with quality, reliability and value .....
- ☐ **CNE In-House or On-site Service**
- ☐ **Quality Systems & Excellent Service**
- ☐ **Network Training (Novell classes)**
- ☐ **Leasing Plan available**
- ☐ **Maintenance Contracts**
- ☐ **Novell Authorized Dealer**

This Month Specials:

INFINITI

Question:
What good is a system with VESA local bus motherboard, VESA local bus SuperVGA video card, but with a regular SuperVGA color monitor that does not meet VESA standards?
Answer:
Infiniti now has a VESA standard SuperVGA Non-Interlaced color monitor, the IN8828N4 to compliment your VESA local bus systems. The IN8828N4 monitor provides true VESA standard flicker-free displays. Manufactured by **Proton**, a premier brand in Audio-Video electronic products, you can be assured only the highest quality is delivered.

IN8828N4 major features:
14" non-glare, .28dot pitch non-interlaced
Maximum resolution up to **1280x1024** (not 1024x768!)
Compatible with VESA standards
Compatible with Apple Macintosh II (optional cable)
Horizontal sync 30 - 50KHz
Vertical sync 44 -100Hz
Universal Power Supply 110 - 220 externally switchable

$305

Zoltrix

Zoltrix 14400/14400 Internal High Speed Fax/Data Modem

Fax Features:
- Send and receive Fax message to or from any Group 3 Fax machine/ Fax cards
- Auto detect incoming fax or modem calls
- supports multiple file formats: ASCII, PCX, TIFF, IMG, BFX, DCX, TIFF class F
- Read word processing files directly
- Busy auto redial

Modem features:
- AT command set compatible
- V.42bis, MNP class 5
- V.42 Error correction: fully compliant with LAP-M and MNP class protocols

$195

386SX-25MHz NoteBook

Name Brand NoteBook for No-Name Price
- ☐ 386SXL Processor running at 25MHz
- ☐ 2MB Memory (Expandable to 8MB)
- ☐ 60MB Hard Drive
- ☐ Built-in Trackball
- ☐ 9.4" Super Twist LCD Display w/32 Levels of Grey
- ☐ 1.44MB Floppy Drive
- ☐ Universal AC Adapter
- ☐ 8.5"x11"x1.9"
- ☐ Only 6.2 lbs with battery, 4.9 lbs w/o battery
- ☐ Self-Latching Battery Pack ensures constant battery contact, even with heavy movement
- ☐ Upto 4 Hours Operation, 35 Hours Suspend Mode
- ☐ Easily upgradable Memory and Math Co-processor
- ☐ MS DOS 5.0 & MS Windows 3.1 included
- ☐ One year manufacture warranty

$999^{95}

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SYSTEM BOARDS (0K)

VESA Local Bus System Boards (w/CPU)

Orchid 486DX2-66MHz VESA Local Bus M/B w/256K Cache	$815.00
Orchid 486DX-50MHz VESA Local Bus M/B w/256K Cache	$710.00
Orchid 486DX-33MHz VESA Local Bus M/B w/256K Cache	$580.00
AIR Baby 486DX2-66MHz VESA Local Bus M/B w/256K Cache	$795.00
AIR Baby 486DX-50MHz VESA Local Bus M/B w/256K Cache	$685.00
AIR Baby 486DX-33MHz VESA Local Bus M/B w/256K Cache	$560.00
VEGA Baby 486DX2-66MHz VESA Local Bus M/B w/256K Cache	$775.00
VEGA Baby 486DX-33MHz VESA Local Bus M/B w/256K Cache	$545.00
EFAR Baby 486DX2-66MHz VESA Local Bus M/B w/256K Cache	$705.00
EFAR Baby 486DX-33MHz VESA Local Bus M/B w/256K Cache	$470.00
OPTI Baby 486DX2-66MHz VESA Local Bus M/B w/256K Cache	$715.00
OPTI Baby 486DX-33MHz VESA Local Bus M/B w/256K Cache	$480.00
Hint Baby 486DX2-66MHz EISA VESA Local Bus M/B w/256K Cache	$770.00
Hint Baby 486DX-33MHz EISA VESA Local Bus M/B w/256K Cache	$535.00

VESA Local Bus Video Cards & Controllers:

ATi VLB mach 32 VESA Local Bus Graphics Accelerator w/2MB	$405.00
Diamond Stealth-24 VESA Local Bus Graphics Accelerator w/1MB	$195.00
Diamond Viper VESA Local Bus Graphics Accelerator w/2MB VRAM	$415.00
Genoa 1MB VESA Local Bus Graphics Accelerator	$130.00
Oak 087 1MB VESA Local Bus Graphics Accelerator	$120.00
Orchid Fahrenheit VESA Local Bus Windows Accelerator w/1MB	$195.00
Orchid P9000 VESA Local Bus Graphics Accelerator w/3MB	$410.00
Orchid IO440-0 VESA Local Bus IDE Controller w/Multi I/o	$68.00
Turbo VESA Local Bus IDE Controller w/Multi I/O	$78.00
VESA Local Bus IDE Controller with Multi I/O	$58.00
Tekram DC-680 VESA Local Bus IDE Caching Controller (up to 16MB)	$190.00
UltraStor 34F VESA Local Bus SCSI Controller (Bus Master)	$280.00

EISA Bus & EISA Local Bus System Boards (w/CPU)

AIR Baby 486DX2-66MHz EISA M/B w/256K Cache (USA made)	$990.00
AIR Baby 486DX-50MHz EISA M/B w/256K Cache (USA made)	$885.00
AIR Baby 486DX-33MHz EISA M/B w/256K Cache (USA made)	$770.00
VEGA Baby 486DX2-66MHz EISA M/B w/256K Cache (USA made)	$940.00
VEGA Baby 486DX-50MHz EISA M/B w/256K Cache (USA made)	$835.00
VEGA Baby 486DX-33MHz EISA M/B w/256K Cache (USA made)	$710.00
OPTI Baby 486DX2-66MHz EISA Local Bus M/B w/256K Cache	$890.00
OPTI Baby 486DX-50MHz EISA Local Bus M/B w/256K Cache	$785.00
OPTI Baby 486DX-33MHz EISA Local Bus M/B w/256K Cache	$660.00

ISA Bus System Boards (w/CPU)

VEGA Baby (3)486DX2-66MHz M/B w/256K Cache (USA made)	$748.00
VEGA Baby (3)486DX-50MHz M/B w/256K Cache (USA made)	$638.00
VEGA Baby (3)486DX2-50MHz M/B w/256K Cache (USA made)	$623.00
VEGA Baby (3)486DX-33MHz M/B w/64K Cache (USA made)	$480.00
VEGA Baby (3)486SX-25MHz M/B w/64K Cache (USA made)	$340.00
VEGA Baby 3(4)86DX-40MHz M/B w/64K Cache (USA made)	$232.00
VEGA Baby 3(4)86DX-33MHz M/B w/64K Cac(e (USA -ade)	$232.00
OPTI Mini 486DX2-66MHz M/B w/256K Cache (Write-back cache)	$702.00
OPTI Mini 486DX-50MHz M/B w/256K Cache (Write-back cache)	$592.00
OPTI Mini 486DX2-50MHz M/B w/256K Cache (Write-back cache)	$577.00
OPTI Mini 486DX-33MHz M/B w/128K Cache (Write-back cache)	$440.00
OPTI Mini 486SX-25MHz M/B w/128K Cache (Write-back cache)	$300.00
Symphony Mini 486DX2-66MHz M/B w/256K Cache	$710.00
Symphony Mini 486DX-50MHz M/B w/256K Cache	$605.00
Symphony Mini 486DX2-50MHz M/B w/256K Cache	$585.00
Symphony Mini 486DX-33MHz M/B w/64K Cache	$445.00
Symphony Mini 486SX-25MHz M/B w/64K Cache	$305.00
UMC Mini 486DLC-40 M/B w/64K Cache (Cyrix 486DLC-40 CPU)	$355.00
UMC Mini 486DLC-33 M/B w/64K Cache (Cyrix 486DLC-33 CPU)	$305.00
OPTI Mini 486DLC-40MHz M/B w/128K Cache	$355.00
OPTI Mini 486DLC-33MHz M/B w/128K Cache	$305.00
OPTI Mini 386DX-40MHz M/B w/128K Cache (Write-back cache)	$179.00
UMC Mini 386DX-40MHz M/B w/128K Cache (Write-back cache)	$180.00
OPTI Mini 386DX-33MHz M/B w/128K Cache (AMD CPU)	$182.00
UMC Mini 386DX-33MHz M/B w/128K Cache (AMD CPU)	$182.00
**** 256K Cache upgrade from 64K for all 486 and 386 M/B*	*$45.00*
**** 256k Cache upgrade from 128K for all 486 and 386 M/B*	*$30.00*
OPTI Mini 386SX-40MHz MB w/16K Cache	$135.00
MX Mini 386SX-40MHz M/B	$124.00
OPTI Mini 386SX-33MHz M/B	$127.00
ALI Mini 386SX-33MHz M/B	$109.00
PC Mini 386SX-33MHz M/B	$104.00
C & T Mini 386SX-25MHz M/B	$122.00

ADD-ON BOARDS

Mono/Graphics/Printer Card	$15.00
AVGA-1 VGA Card w/256K	$27.00
AVGA-3 1MB Graphics Accelerator	$62.00
TVGA-9000 VGA Card w/256K (Trident 9000 Chipset,upto 512K)	$34.00
TVGA-8900CL 1MB SuperVGA Card (2x faster than Trident 8900C)	$63.00
PVGA-1C VGA Card w/256K (WD90C11 Chipset,upto 512K)	$49.00
PVGA-1D SuperVGA Card w/1MB (WD90C30 Chipset)	$78.00
PVGA-1DW Graphics Accelerator w/1MB & Hi-Color Chip	$110.00
ATi Graphics Ultra Plus (1280x1024, 2MB Dram)	$320.00
ATi Graphics Ultra Pro (1280x1024 Non-Interlaced, 2MB VRam)	$405.00
ATi Graphics Ultra Pro EISA w/2MB VRAM	$565.00
Diamond SpeedStar-24X 1MB VGA Card (16Million colors)	$160.00
Diamond Stealth-24 1MB Windows Accelerator (16Million colors)	$165.00
Orchid Pro-Designer IIs 1MB VGA Card w/Sierra RAMDAC	$142.00
Orchid Pro-Designer IIs-E 1MB EISAVGA Card w/Sierra RAMDAC	$165.00
Orchid Fahrenheit Windows Accelerator (24-bit, 16.7Mil colors) w/1MB	$175.00
Orchid Fahrenheit-VA Windows Accelerator with Voice Annotation w/1MB - 24bit, 16.7Million colors, 1280x1024, Audio capabilities	$209.00
AT I/O (2 Serial 1 Parallel 1Game) Card	$14.00
High Speed AT I/O (2 Serial 1 Parallel) - compatiable 16C550	$40.00
Parallel (Printer) Card	$10.00
AT IDE Adapter (Dual floppy & hard disk) w/Cable	$15.00
AT Super IDE IO Adapter (Dual floppy & hard disk, 2S, 1P, 1G)	$20.00
GSI-11V 2.88M Four (4) Floppy Controller & Cable	$52.00
GSI-18V Co-resident IDE Controller (Works with ST412,ESDI,SCSI)	$42.00
GSI-21V 2.88M Four (4) Floppy & Intelligent IDE Adapter w/Cable	$62.00
Promise IDE Caching Controller (512K,upto 8.5MB,2FD/2HD)	$123.00
Tekram DC-600B ISA IDE Caching Controller (up to 16MB)	$150.00
Tekram DC-680 VESA Local Bus IDE,Caching Controller (up to 16MB)	$190.00
DTC-2290 EISA IDE Floppy/Hard Disk Contorller	$120.00
DTC-3290 EISA SCSI Caching FD/HD Controller (0K, upto 4MB)	$435.00
DTC-3292 EISA SCSI FD/HD Controller	$325.00
UltraStor 15C IDE Caching FD/HD Controller w/0MB (upto 8MB)	$185.00
UltraStor 14F SCSI FD/HD Controller	$210.00
UltraStor 24F EISA SCSI FD/HD Controller	$360.00
UltraStor 34F VESA Local Bus SCSI FD/HD Controller	$280.00
Future Domain 1670 16-bit SCSI Floppy/Hard Disk Adapter Kit	$158.00
Always IN-2000 16-bit SCSI Host Adapter (Novell Certified)	$189.00
ADAPTEC AHA-1542CK SCSI Bus Master Host Adapter Kit	$260.00
ADAPTEC AHA-1542BK-Plus SCSI Bus Master Host Adapter Kit	$315.00
ADAPTEC AHA-1742AK EISA SCSI Bus Master Adapter Kit	$410.00

MONITORS

AcerView 11 14" VGA Monitor (640x480,.39dp)	$230.00
AcerView 33D 14" SuperVGA Color Monitor (1024x768,.28dp)	$280.00
AcerView 34T 14" Non-Interlaced Monitor (1024x768, 28dp)	$310.00
AcerView 35 14" SuperVGA Monitor (1024x768,.26dp)	$450.00
AcerView 56L 15" Digital Multi-Frequency Color Monitor (.28dp)	$480.00
AcerView 76i 17" Digital Multi-Frequency Color Monitor (.28dp0	$885.00
CTX5439A 14" SuperVGA Color Monitor (1024x768,.39dp)	$238.00
CTX5468A 14" SuperVGA (TriScan) Color Monitor (1024x768,.28dp)	$275.00
CTX5468NI 14" Non-Interlaced Color Monitor (1024x768,.28dp)	$305.00
CTX1461 14" Non-Interlaced Color Monitor (1024x768, 72Hz refresh)	$325.00
CTX1560 15" Digital Non-Interlaced Color Monitor (1024x768,.28dp)	$445.00
CTX1760 17" Digital Flat-Screen Color Monitor (1280x1024,.28dp)	$805.00
Infiniti IN8339SV 14" SuperVGA Color Monitor (1024x768,.39dp)	$225.00
Infiniti IN8328SV 14" SuperVGA Color Monitor (1024x768,.28dp)	$262.00
Infiniti IN8828SV 14" SuperVGA Color Monitor (1024x768,.28dp)	$268.00
Infiniti IN8828N4 14" Non-Interlaced Color Monitor (1280x1024,.28dp)	$305.00
MAG 1564 15" Color Monitor (1280x1024,.28dp0	$480.00
MAG MX-15H 15" Color Monitor (1280x1024,.28dp)	$555.00
MAG MX-17H 17" Color Monitor (1280x1024,.28dp)	$995.00
NEC MultiSync 3FGx 15" Color Monitor (1024x768,.28dp)	$625.00
NEC MultiSync 4FG 15" Color Monitor (1024x768,.28dp)	$750.00
NEC MultiSync 5FG 17" Color Monitor (1280x1024,.28dp)	$1315.00
NEC MultiSync 6FG 21" Color Monitor (1280x1024,.28dp)	$2350.00
Optiquest 1500D 14" Digital Non-Interlaced Monitor (1024x768,.28dp)	$375.00
Optiquest 2000DX 15" Digital Multi-Freq Monitor (1280x1024, 28dp)	$498.00
Optiquest 4000DX 17" Digital Multi-Freq Color Monitor (1024x768,.31dp)	$735.00
Sony CPD-1430 14" MultiScan Monitor (Non-Interlaced,.25dp)	$590.00
Sony CPD-1604S 17" MultiScan Monitor (Non-Interlaced,.25dp)	$995.00
ViewSonic 4E 14" SuperVGA Color Monitor (1024x768,.28dp)	$295.00
ViewSonic 6 14" Non-Interlaced Color Monitor (1024x768,.28dp)	$335.00
ViewSonic 6E 14" Non-Interlaced Color Monitor (1024x768,.28dp)	$328.00
Viewsonic 5E 14" Non-Interlaced Color Monitor (1024x768,72Hz refresh)	$385.00
ViewSonic 6FS 15" Digital Multi-Frequency Color Monitor	$525.00
ViewSonic 7 17" Digital Multi-Frequency Color Monitor (.28dp)	$955.00
ViewSonic 8 20" Digital Multi-Frequency Color Monitor (.31dp)	$1560.00
ViewSonic 15 15" Digital Multi-Freq Color Monitor (.28dp,76Hz refresh)	$625.00
ViewSonic 17 17" Digital Multi-Freq Color Monitor (.28dp,76Hz refresh)	$1160.00
ViewSonic 20 20" Digital Multi-Freq Color Monitor (.28dp,76Hz refresh)	$1785.00

FLOPPY & HARD DRIVES

TEAC 1.2MB FDD (5.25")	$54.00
TEAC 1.44MB FDD (3.5") w/Mounting Kit	$49.00
TEAC 2-in-1 1.2/1.44MB FDD	$127.00
TEAC 2.88MB FDD (3.5") w/Mounting Kit	$88.00
Mitsumi 1.2MB FDD (5.25")	$50.00
Mitsumi 1.44MB FDD (3.5") w/Mounting Kit $46.00Conner CP-30084 80MB IDE HDD (17ms)	$193.00
Conner CP-30104 120MB IDE HDD (17ms)	$223.00
Conner CP-30174 170MB IDE HDD (17ms)	$248.00
Conner CP-30204 210MB IDE HDD (12ms,256K cache buffer)	$325.00
Conner CP-30254 251MB IDE HDD (14ms,64K cache buffer)	$340.00
Conner CP-3544 520MB IDE HDD (12ms,256K cache buffer)	$850.00
Conner CP-3540 520MB SCSI HDD (12ms,256K cache buffer)	$860.00
Fujitsu M2624T 520MB IDE HDD (12ms, 5yr warranty)	$820.00
Fujitsu M2624FA 520MB SCSI HDD (12ms, 5 yr warranty)	$830.00
Fujitsu M2266SA 1.2GB SCSI HDD (12ms, 5yr warranty)	$1230.00
Fujitsu M2652S 2.0GB SCSI HDD (12ms, 5yr warranty)	$2040.00
Fujitsu M2654S 2.4GB SCSI HDD (12ms, 5yr warranty)	$2290.00
Maxtor MX-7120A 120MB IDE HDD (15ms)	$220.00
Maxtor MX-7120S 120MB SCSI HDD (15ms)	$260.00
Maxtor MX-7213A 213MB IDE HDD (15ms)	$308.00
Maxtor MX-7213S 213MB SCSI HDD (15ms)	$360.00
Maxtor MX-7245A 245MB IDE HDD (15ms)	$320.00
Maxtor LXT-340A 340MB IDE HDD (13ms)	$575.00
Maxtor LXT-340S 340MB SCSI HDD (13ms)	$585.00
Maxtor LXT-535A 520MB IDE HDD (13ms)	$885.00
Maxtor LXT-535S 520MB SCSI HDD (13ms)	$890.00
Maxtor MX-540SL 540MB SCSI HDD (8.5ms)	$1045.00
Maxtor MXT-1240S 1.2GB SCSI HDD (8.5ms)	$1570.00
Maxtor PO-12 1.2GB SCSI HDD (13ms)	$1275.00
Maxtor P1-17S 1.7GB SCSI HDD (13ms)	$1495.00
Quantum ProDrive ELS 42MB IDEHDD (19ms, 2yr warranty)	$145.00
Quantum ProDrive ELS 85MB IDE HDD (17ms, 2yr warranty)	$195.00
Quantum ProDrive ELS127MB IDE HDD (17ms, 2yr warranty)	$245.00
Quantum ProDrive ELS 170MB IDE HDD (17ms, 2yr warranty)	$290.00
Western Digital AC1170 170MB IDE HDD (14ms)	$280.00
Western Digital AC2200 209MB IDE HDD (13ms)	$305.00
Western Digital AC2250 250MB IDE HDD (13ms)	$330.00
Western Digital AC2340 340MB IDE HDD (13ms)	$465.00
SyQuest SQ555 44MB SCSI Removable Disk Drive	$295.00
SyQuest SQ5110 88MB SCSI Removable Disk Drive	$355.00
SyQuest SQ400 44MB Cartridge	$75.00
SyQuest SQ800 88MB Cartridge	$108.00
SyQuest SQ01 SCSI Adapter w/Software	$45.00
SyQuest External Kit	$105.00
Hi-Lite (Archive) California-250 250MB Tape Backup	$189.00
Colorado Memory System JT-10 120MB Parallel Port Tape Backup	$355.00
Colorado Memory System JT-20 250MB Parallel Port Tape Backup	$420.00
Colorado Memory System DJ-10 120MB Tape Backup	$159.00
Colorado Memory System DJ-20 250MB Tape Backup	$209.00
Colorado Memory System AB-11 External Adapter Kit	$35.00
Colorado Memory System KE-09 External Drive Kit	$75.00
Colorado Memory System FC-10 500Kb/s-1Mb/s Adapter Kit	$85.00
Colorado Memory System TC-15 Data Compression Adapter Kit	$185.00
Summit SE-120 120MB Tape Backup w/PC Tool Backup Software	$150.00
Summit SE-250 250MB Tape Backup w/PC Tool Backup Software	$190.00
Summit SE-305 305MB IDE Tape Backup w/SummitSafe Software	$260.00
3M DC2120 120/250MB Mini Data Cartridge	$20.00
Sony QD2120 120/250MB Mini Data Cartridge	$18.00
Maxell DC-2120 120/250MB Mini Data Cartridge	$18.00
Mitsumi CRMC Internal CD-ROM w/Interface (350ms)	$199.00
NEC CDR-74-1 External SCSI CD-ROM/MPC	$625.00
NEC CDR-84-1 Internal SCSI CD-ROM/MPC	$560.00
Panasonic CR-522-B Internal CD-ROM w/Interface	$250.00
Sony CDU-31A Internal CD-ROM Drive w/Interface	$245.00
Sony CDU-535 Internal CD-ROM Drive w/Interface	$300.00
Sony CDU-541 Internal SCSI CD-ROM Drive	$440.00
Media-Vision Fusion CD-16 Multimedia System w/SONY 31A CD-ROM	$495.00
Media-Vision Audio Spectrum 16 Multimedia System w/NEC-84	$895.00
SMS Wild Multi-Media System w/SONY 31A CD-ROM & 5 CD titles	$425.00
NEC CD-Express w/NEC CDR-25 CD-ROM reader & 10 CD titles	$425.00
**** CD Package - MultiMedia Encyclopedia, The Animals! (The San Diego Zoo) Reference Library, US Atlas / World Atlas, Monkey Island*	*$95.00*
Labtec CS-15 Shielded amplified micro stereo speakers	$19.50
Labtec CS-550 Shielded stereo micro speakers with built-in power boosters	$27.50
Labtec SS-700 Shielded amplified micro stereo speakers w/3-band EQ	$32.50
Labtec AD-4 400mA AC Adapter (for Labtec Speakers)	$9.95

PRINTERS

Citizen 200GX Printer (9pin/213cps 80col/color option)	$158.00
Citizen GSX-230 Quiet Printer (24pin color option)	$236.00
Citizen GSX-240 Quiet Printer (24pin/300cps/80col/color option)	$295.00
Citizen GSX-145 Printer (24pin/192cps/132col/color option)	$365.00
**** Color Kit for Citizen 200GX, GSX-230 or GSX-240*	*+45.00*
NEC SilentWriter Model 95 w/2MB Postscript Printer	$1395.00
NEC SilentWriter Model 97 w/2MB Postscript Printer (10ppm)	$1745.00
Panasonic KX-P1123 Printer (24pin/240cps/80col)	$198.00
Panasonic KX-P1124i Printer (24pin/300cps/80col)	$289.00
Panasonic KX-P2180 Quiet Printer (9pin/240cps/80col/color option)	$178.00
Panasonic KX-P2123 Quiet Printer (24pin/240cps/80col/color option)	$242.00
Panasonic KX-P2124 Quiet Printer (24pin/320cps/80col/color option)	$318.00
Panasonic KX-P2624 Quiet Printer (24pin/300cps/132col)	$398.00
**** Color Kit for Panasonic KX-P2180, KX-P2123 or KX-P2124*	*+45.00*
Panasonic KX-P4410 Laser Printer (5ppm/512K/300dpi)	$625.00
Panasonic KX-P4430 Laser Printer (5ppm/1MB/300dpi)	$895.00
Okidata OL400P LED Page Printer	$598.00
Okidata OL810 LED Page Printer	$1048.00
Okidata OL830 LED Page Printer	$1278.00
Okidata OL840 Postscript Printer	$1598.00
Star NX-1001 Multi-Font Printer (9pin/180cps/80col)	$139.00
Star NX-2430 Multi-Font Printer (14pin/240cps/80col)	$228.00
Star NX-2420R Rainbow Color Priner (24pin/250cps/80col)	$289.00
Star LS-5 Laser Printer (5ppm/512K/600x300dpi/15 scalable typefaces)	$635.00
Star LS-5EX Laser Printer (5ppm/1MB/600x300dpi/23 scalable typefaces)	$795.00
Star LS-5TT Laser Printer (5ppm/2MB/600x300dpi/58 scalable typefaces)	$1035.00

KEYBOARDS

BTC 5339SX 101keys Keyboard	$25.00
Focus-2001 101keys Keyboard w/Hard Dustcover (Click)	$42.00
Focus-6000 101keys Keyboard (Soft click)	$35.00
Focus-8000 111keys Keyboard (Calculator, Soft click)	$45.00
Focus-9000 128keys Keyboard (Programmable, Click)	$66.00
Fujitsu-4700 101keys Keyboard	$47.00
Fujitsu-4870 101keys Keyboard	$39.00
Honeywell-101WN 101keys Keyboard (3yr. warranty)	$40.00
KT-2000 101keys Keyboard (Keytronic made)	$42.00
Kanrich M-102 102 keys Keyboard	$22.00
MaxSwitch 101 keys Keyboard	$35.00
MaxiSwitch 124keys Programmable Keyboard	$69.00

CHASIS (CASES)

CS-20 Baby AT Case w/200W UL P.S. (3x5.25",2x3.5")	$84.00
CS-35 Mid Vertical Case w/230W UL P.S. (3x5.25",3x3.5",Digital)	$92.00
CS-36 Full Vertical Case w/230W UL P.S. (6x5.25",2HD,Digital)	$129.00
CS-300GTS Full Vertical Case w/300W UL P.S. (7x5.25", Double fan)	$180.00
CS-510 Baby AT Case w/200W P.S. (3x5.25",1x3.5")	$65.00
CS-740 Mini Vertical Case w/230W P.S. (2x5.25",3x3.5",Door,Digital)	$72.00
CS-760 Mid Vertical Case w/230W P.S. (3x5.25",3x3.5",Door,Digital)	$90.00
CS-780 Full Vertical Case w/230W UL P.S (4x5.25",2HD,Door,Digital)	$120.00
CS-931 Mini Vertical Case w/230W P.S. (2x5.25",3x3.5",Digital)	$62.00
CS-932 Mini Vertical Case w/230W P.S. (2x5.25",3x3.5")	$60.00
CS-923 Mid Vertical Case w/230W P.S. (3x5.25",3x3.5",Digital)	$80.00
CS-912 Full Vertical Case w/230W UL P.S. (4x5.25",2HD,Digital)	$115.00
Diamond Series: (Black color model available +$3.00)	
CS-130 Full Vertical Case w/250W UL P.S. (4x5.25",2HD,Digital)	$142.00
CS-230 Mid Vertical Case w/250W UL P.S. (4x5.25",2HD,Digital)	$130.00
CS-330 Mini Vertical Case w/220W UL P.S. (2x5.25",3x3.5",Digital)	$84.00
CS-530 Desktop Case w/250W UL P.S. (2x5.25",2x3.5",2HD,Digital)	$96.00
CS-730 Baby AT Case w/220W UL P.S. (2x5.25",1x3.5,1HD,Digital)	$86.00
CS-830 Slim Line Case w/220W UL P.S. (1x5.25",1x3.5",1HD,Digital)	$88.00
2nd Fan for Diamond Series cases (CS 130,CS-230,CS-530)	*$10.00*

MISCELLANEOUS

Creative Lab Sound Blaster	$85.00
Creative Lab Sound Blaster Pro (Basic)	$138.00
Creative Lab Sound Blaster Pro (Full)	$172.00
Creative Lab Sound Blaster ASP-16	$240.00
Creative Lab Video Blaster w/Microsoft video for Windows	$355.00
Media-Vision Pro Audio Spectrum 16 Sound Card	$180.00
Orchid Sound Producer Pro w/Mic & Speaker	$149.00
Honeywell 3-buttom Serial Mouse	$45.00
Logitech Dexxa Mouse	$24.00
Logitech Bus MouseMan	$66.00
Logitech PS-2/Serial Combo MouseMan	$64.00
Logitech Trackman II (Serial)	$80.00
Logitech Trackman Portable	$102.00
MicroSoft Serial Mouse	$78.00
MicroSoft-Bus Mouse	$90.00
MicroSoft BallPoint Mouse for Notebook computer	$105.00
Hayes Optima External 9600 Data Modem	$335.00
Hayes Optima External 9600 Data/Fax Modem	$348.00
Hayes Optima External 14400 Data Modem	$355.00
Hayes Optima External 14400 Data/Fax Modem	$378.00
Intel SatisFAXtion model 100 Internal Fax Modem	$105.00
Intel SatisFAXtion model 200 Internal Fax Modem	$305.00
Intel SatisFAXtion model 400 Internal Fax Modem	$415.00
Intel SatisFAXtion modem 400 External Fax Modem	$455.00
U.S. Robotics Sportster 9600PC Internal Data Modem	$260.00
U.S. Robotics Sportster 9600 External Modem	$275.00
U.S. Robotics Sportster 14400PC Internal Data Modem	$270.00
U.S. Robotics Sportster 14400 External Data Modem	$285.00
U.S. Robotics Sportster 14400/9600 Internal Data/Fax Modem	$295.00
U.S. Robotics Sportster 14400/9600 External Data/Fax Modem	$315.00
Zoltrix 2400i Internal 2400Baud Data Modem	$34.00
Zoltrix Standard Internal 9600SR/2400 Send/Receive Fax/Data Modem	$58.00
Zoltrix Standard Internal 9600SR/2400 Send/Receive Fax/Data Modem -w/BitFax for Windows	$60.00
Zoltrix Enhanced Internal 9600SR/2400 Send/Receive Fax/Data Modem - with Hardware MNP5 & V.42bis	$92.00
Zoltrix Pocket 9600SR/2400 Send/Receive Fax/Data Modem	$108.00
Zoltrix 14400/14400bps Internal V.32/V.42bis/MNP5 Data/Fax Modem	$195.00
Zoltrix 14400/14400bps External V.32/V.42bis/MNP5 Data/Fax Modem	$225.00
Aceex 9600bps Internal V.32/V.42bis/MNP5 Data Modem	$165.00
Aceex 9600bps External V.32/V.42bis/MNP5 Data Modem	$185.00
Aceex 14400/9600SR Internal Data/Fax Modem	$198.00
Aceex 14400/9600SR External Data/Fax Modem	$228.00
Cyrix 83S87-16 / IIT 3C87SX-16 Math Coprocessor	$69.00 / $69.00
Cyrix 83S87-25 / IIT 3C87SX-25 Math Coprocessor	$74.00 / $72.00
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Cyrix 83D87-25 / IIT 3C87DX-25 Math Coprocessor	$80.00 / $76.00
Cyrix 83D87-33 / IIT 3C87DX-33 Math Coprocessor	$88.00 / $79.00
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PASADENA

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486DX-33MHz

- INTEL 80486 PROCESSOR WITH BUILT-IN MATH
- 256K CACHE RAM
- 170MB HD, 13MS
- 4MB RAM UP TO 32MB RAM ON BOARD
- 1.2MB & 1.44MB FLOPPY DRIVE
- DUAL IDE FD/HD CONTROLLER
- AT I/O: 2 SERIAL/1 PARALLEL/1 GAME
- 16 BIT SVGA CARD W/1 MB RAM
- 14" 1024 X 768 0.28 DOT SVGA MONITOR
- 101 ENHANCED KEYBOARD

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- 256K CACHE RAM
- 4MB RAM UP TO 32 MB RAM ON BOARD
- 1.2MB & 1.44MB FLOPPY DRIVE
- DUAL IDE FD/HD CONTROLLER CARD
- AT I/O: 2 SERIAL/1 PARALLEL/1 GAME
- 101 KEYBOARD
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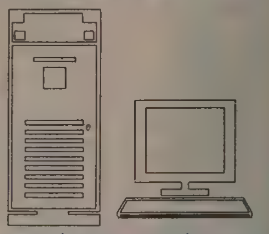
- 125MB HD, 17MS (BUILT-IN 32K CACHE)
- DUAL IDE FD/HD CONTROLLER
- AT I/O: 2 SERIAL/1 PARALLEL/1 GAME
- 16 BIT SUPER VGA CARD W/1MB RAM
- 14" 1024 x 768 0.28 DOT SVGA MONITOR
- 101 ENHANCED KEYBOARD

SALE PRICE: $1176

CASH DISCOUNT: $1075

VESA LB 486DX-33/DX-50/DX2-66



- 170MB IDE HARD DISK, 13MS
- 32 BIT VESA SVGA CARD 1280 w/1MB 16.7M COLORS
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- 1.2MB & 1.44MB FLOPPY DRIVE
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- 101 KEYBOARD

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- 1.2MB & 1.44MB FLOPPY DRIVE
- 125MB HD, 17MS (BUILT-IN 32K CACHE)
- DUAL IDE FD/HD CONTROLLER
- AT I/O: 2 SERIAL/1 PARALLEL/1 GAME
- 16 BIT SUPER VGA CARD W/1MB RAM
- 14" 1024 x 768 0.28 DOT SVGA MONITOR
- 101 ENHANCED KEYBOARD

SALE PRICE: $1045

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486DX-50MHz/DX2-66MHz (25% FASTER THAN 486DX-50)

- INTEL 80486 PROCESSOR WITH MATH
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- 4MB RAM UP TO 32 MB
- 1.2MB & 1.44MB FLOPPY DRIVE
- 170MB HD, 13MS
- DUAL IDE FD/HD CONTROLLER
- AT I/O: 2 SERIAL/1 PARALLEL/1 GAME
- 16 BIT SVGA CARD W/1 MB RAM
- 14" 1024 X 768 0.28 DOT SVGA MONITOR
- 101 ENHANCED KEYBOARD

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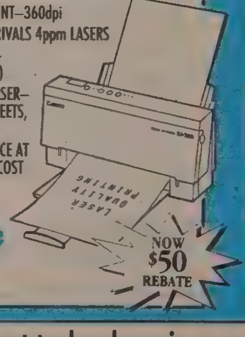
Printers Buyer's Guide and Handbook

Canon BubbleJet 200 Desktop Printer



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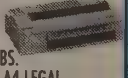

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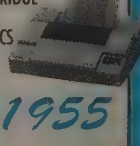
- LASER QUALITY TEXT & GRAPHICS



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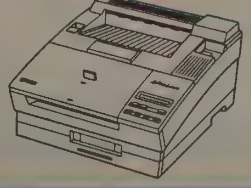

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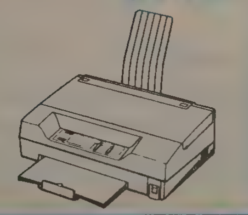

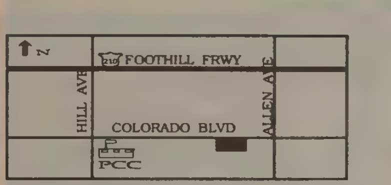

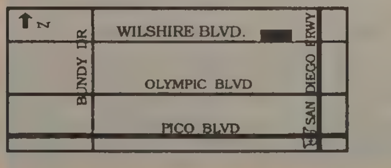

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Continued from page 54

you can't effectively introduce new products, because there are so many old products still in the pipeline.

The third problem is that the maturity of the market results in demand for customization. All the retail channels ask for slightly different packaging of their product, and you can't do that very effectively several thousand miles away. You have to do that in the marketplace.

Therefore about two years ago we reengineered our entire manufacturing idea. We said, "We're going to assemble in the most efficient manner, in the marketplace." And so we redesigned our products, and we restructured our manufacturing process, and as a result we come to assemble almost all the units in the market in the US today.

We ship large items, such as the housing and power supply, in bulk by sea, because their cost is relatively stable—plastic and metal do not change cost too much. We maintain a constant supply of those housings.

We airlift the motherboards into San Jose on a weekly basis. And finally, we ask Intel and our hardware suppliers to deliver the products to our door in San Jose. The idea is to build as fresh a product as possible, just in time with the latest cost, to the customer.

As a result, we've been able to reduce inventory significantly and shorten our lead time, so we've been able to introduce new products very quickly. We run about thirty-five or forty models of different systems today—it all comes out of two housings and two motherboards, and that's it. The motherboards are all designed to be able to insert multiple-frequency CPUs, so you can switch production to the particular type that's in demand very easily. That gives us configuration flexibility. We assemble them with the latest component costs, so we can remain competitive with pricing in the marketplace.

You've also made some changes in your distribution and support operations recently.

I think much of our growth comes from the fact that we have two major channels. One is through the two-tier distributing channel, going to all the resellers. In the fourth quarter this was very strong, partly, I think, because a number of suppliers have dropped from the market. The resellers started to consolidate into a few of the remaining ones, and our business had a significant increase from that.

We entered the retail channel, what you call the mass merchandise channel, about eighteen months ago, and had significant growth in the fourth quarter. In the retail channel today, we are probably present in every aspect, from computer superstores such as CompUSA to consumer electronics stores such as Circuit City and BestBuy, even department stores, such as WalMart, and some of the specialized catalog stores, such as J. C. Penney and American Express. It's a very broad spectrum of the retail channel, and during the fourth quarter, that channel had a significant unit increase, I think due to home-office users.

We traditionally rely on dealers and resellers to do our service and support. But in the fourth quarter, from both market needs and the increasing competitiveness in the service area, we changed to direct service of our end-users, with direct hotline support and on-site service. That was a significant change; we basically had to restructure our service organization to take up that task.

You sell a wide variety of systems, from low-end PCs to multiprocessor servers. How are these positioned?

The entry line is the Acer ACROS; the midrange is the Acer Power, the EISA-based workstations. The AcerPAC is the multimedia Personal Activity Center. And then we have the notebooks.

On the other side are all the server types of product, and it goes all the way to multiprocessor machines. Altos takes some of this hardware and integrates it with the Altos version of SCO UNIX, and creates a number of integrated systems. And then finally we utilize some of the networking tools to link all these servers and the desktop together to become a client/server environment, and then the application sits on top of that.

What trends do you see for the PC industry in 1993 and beyond?

I think prices will probably continue to drop, but it probably will be at a little slower rate—over the year, probably at least 20%, but mostly that will reflect material cost changes. We just had a round of price reductions by various companies in the last few weeks—I think it's mainly reflecting component cost reductions.

One phenomenon is that absolute prices don't drop—I don't see the cheapest computer sold in our class of supplier dropping below, say, $800–$1000. Rather, more features are being pushed down into the lower price bracket. In other words, you will be able to buy either a bigger hard disk, or more memory, or a faster processor. Most of the product is focused, and the volume happens to be, in the $1000–$1500 range.

We've been selling 486 completely since, I'd say, fourth quarter, and sometime, maybe in the second quarter, I see that even our notebooks will switch completely to 486.

Do you see adopting Pentium any time soon? Have you announced any plans for that?

We do have products which are developed around the Pentium, but this year, I think, because the total unit supply of Pentium in the second half will be fairly small, I don't think it will be a major portion of the business.

In the second half of the year, I think Windows NT will become an important operating system to drive some of the product sales, and some of the shakeout and consolidation will still continue.

Speaking of NT, what impact do you expect it to have on your UNIX business?

I look at the business this way. I think UNIX will continue to have its position and market share come mainly when you try to bring the high-end application from the mainframe downward. On the other side, I think NT will definitely win the consolidation of the desktop world. In other words, if you look at any enterprise where there's a number of PCs running Windows, the NT will become the server behind those things. If you have an organization that started with only a PC, and let's say some Novell LAN networks, over time that kind of environment might migrate onto NT. It's more bottom-up.

Eventually, companies will make their own decisions, but in many cases, I think, they will end up with a UNIX server and an NT server coexisting as an application server behind the front end, the client.

NT has a number of embedded UNIX capabilities, so it's very easy to operate our network with both an NT server and a UNIX server.

NT runs LAN Manager; but LAN Manager has this protocol called TCP/IP which most UNIX systems use to transfer files. So you can actually put a UNIX server and an NT server on the same Ethernet. The user on the front end can run a Windows application, whether it's under NT or just Windows 3.x; you can launch an application automatically by calling up the Windows NT server to run the application.

On the other hand, the UNIX front end can now be adapted into the Windows world also, there's a lot of tools for that. You can take a UNIX application, and all you do is double-click on an icon. The UNIX application will be called into the front end and run. The user probably does not know whether that's being run on the UNIX server or the NT server.

> "Absolute prices don't drop—I don't see the cheapest computer sold in our class of supplier dropping below, say, $800–$1000. Rather, more features are being pushed down into the lower price bracket. In other words, you will be able to buy either a bigger hard disk, or more memory, or a faster processor."

The user only cares about the graphic user interface and applications he's running; he has less concern with whether the server behind it is running the NT operating system or the UNIX operating system.

Could you talk a little bit about your multiprocessor machines? For instance, are they MIPS or Intel? Mr. Shih [chairman of The Acer Group] mentioned last year having a multiprocessor MIPS machine running NT.

Right now we have a prototype of the ARC machine, which is a system developed as part of the ACE initiative. But that was designed mainly as a prototype for some of the ISVs to develop their applications.

We have NT running on the Intel multiprocessor platform, and that's one of the systems of NT server we'll be introducing when NT starts to ship in May or June.

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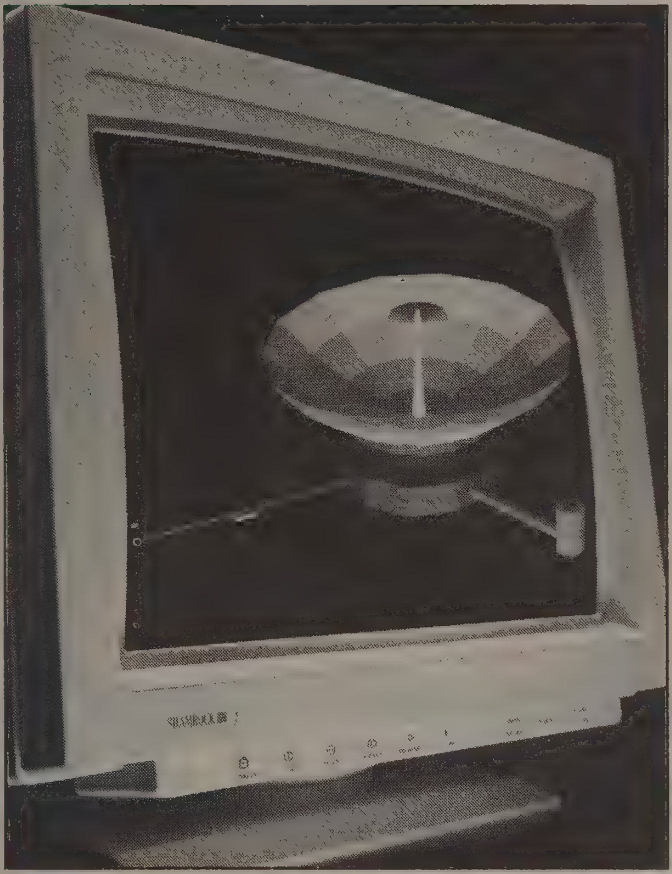

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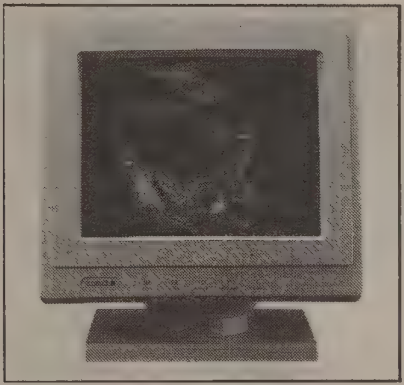

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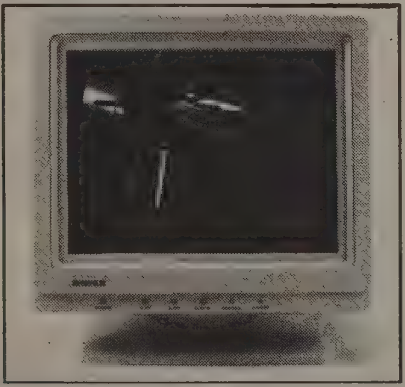

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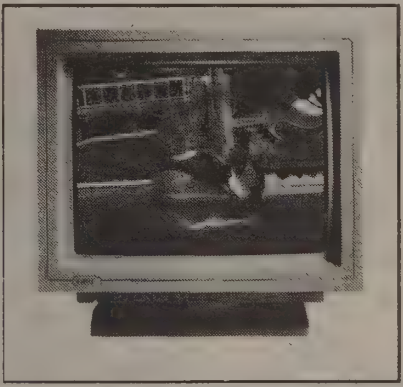

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Today, all our systems are based on the Intel processor. At the highest end is a 486 50MHz multiprocessor system. It probably has one of the highest performance rates in terms of scaling the processor power.

Altos, by integrating the UNIX features on top of this multiprocessor system, was able to have a very good acceptance of the high-end systems going into critical business application areas.

COULD YOU EXPLAIN A LITTLE ABOUT THE FEATURES AND POSITIONING OF YOUR MULTIMEDIA LINE?

In spring 1992 we introduced our first line of multimedia products. We look at multimedia as a platform, as opposed to an end in itself. We've utilized the audio standards, and the MPC and Multimedia Windows capability. We build into the system capabilities such as telephones and digital answering machines, fax, on top of the CD-ROM and sound capabilities. The result is an integrated system where you can use it to play all the multimedia packages, the entertainment aspect of multimedia; or you can use it as a more effective communications computing tool. You can develop a number of applications where you combine the communications capabilities, such as answering machines, together with your PC.

You actually can power down the system, and when the phone rings, the system will wake itself up and answer it in four rings, whether it's a fax or a telephone call. If it's a fax, the system receives the fax and stores it on the hard disk. If it's a telephone call, it starts the answering machine inside, using the multimedia capability, and stores the voice message. Then the computer can go back to sleep.

We will continue on this line of development this year. Probably in the second half of this year, more and more of our systems will be incorporated with these types of features.

WHAT CUSTOMERS DO YOU SEE BEING PARTICULARLY INTERESTED IN THESE FEATURES?

Initially, it's still the individual users and the home office people. One of the problems of multimedia, when you deal with sound or voicemail in the business world, is that you have to figure out a way to tie the system in to the digital phone system world, such as the PBX.

Secondly, there are a lot of issues to deal with—what is the function of PBX or voicemail systems versus networked PCs with telephone links to the outside world? When you merge the communication and the computing worlds, there are still a lot of standards and incompatibilities that have to be resolved. In the business world, let's say you had one of those machines; if your coworker doesn't have that capability, it's still a very restricted use for an individual.

So I think it will take some time for all the multimedia capabilities, particularly the audio/video information transformation, to populate throughout the business world, until some of the standards problems are resolved, and until a significant number of users have that capability in their systems.

KIND OF LIKE THE VIDEOPHONE NOT BEING USEFUL UNLESS THE PERSON ON THE OTHER END HAS ONE TOO.

> **"I think UNIX will continue to have its position and market share come mainly when you try to bring the high-end application from the mainframe downward. On the other side, I think NT will win the consolidation of the desktop world."**

Exactly. So I think the market will continue to develop. Some systems will be sold as an integrated system, with all these capabilities together; on the other side, the add-on market will probably continue to enjoy very hefty growth. At some point, when a significant number of systems have those capabilities, then we'll see a number of new applications being deployed in the business world. ■

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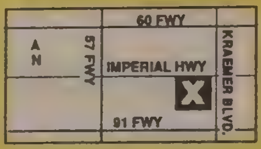

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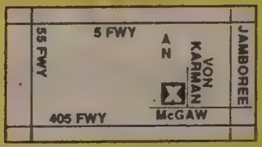

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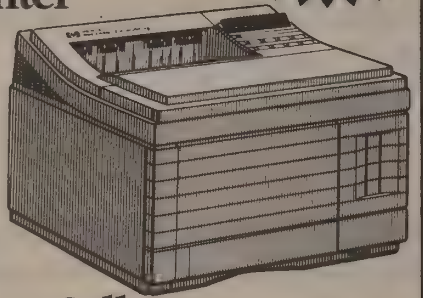

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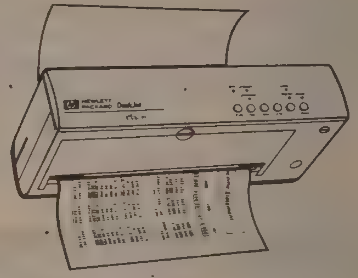

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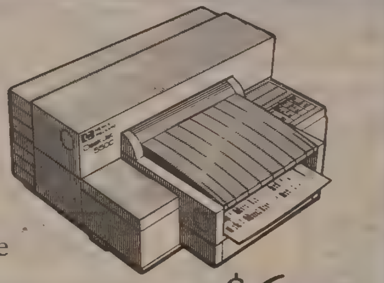

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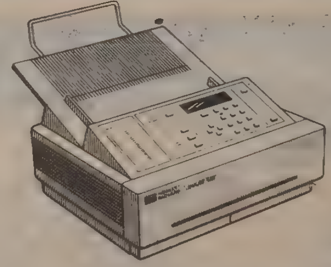

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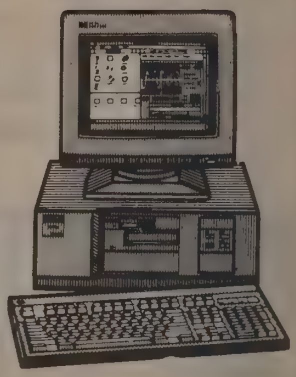

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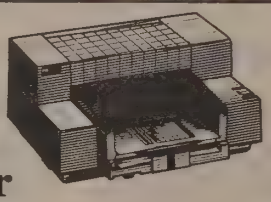

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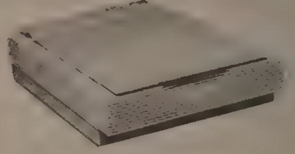

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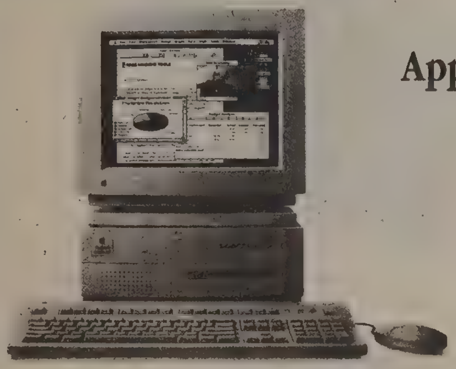

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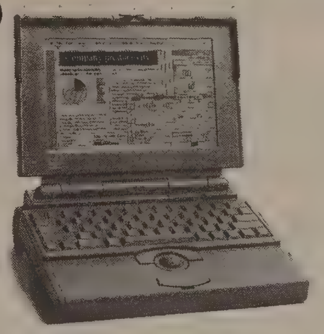

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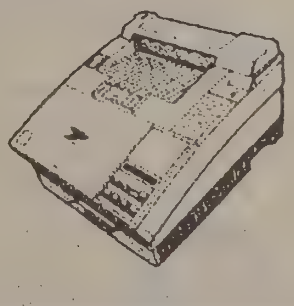

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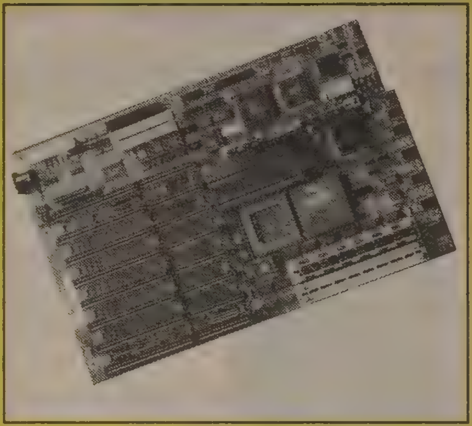

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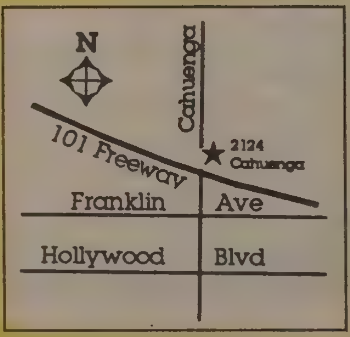

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Continued from page 64

Again, I haven't been able to do justice to many of this program's capabilities. Those who are willing to struggle with FrameMaker's bare-bones, non-Windows-standard front end, recognize its limitations as a pure page layout program, and understand its real mission, will find this a remarkably powerful long-document program.

Ventura 4.1.1: The Latest Update

Speaking of which, let's take a long look at the great trailblazer of long-document DTP programs on the PC—Ventura Publisher. The current version has made some major changes in the user interface which substantially enhance the usability of the program.

However, as we've seen with FrameMaker, usability may not always be the point—utility may be much more important. Ventura's utility, in its latest version, is substantial, and, for many basic page layout tasks, it runs rings around FrameMaker, while closely approaching Frame in long-document power.

There are still numerous problems, both large and small, which I feel unfairly hamper Ventura in its competitive position. For example, a brand-new installation of Ventura can take over two minutes to start up. A solution for this is provided by Ventura, which is workable but irksome.

VENTURA'S WIDTH TABLES

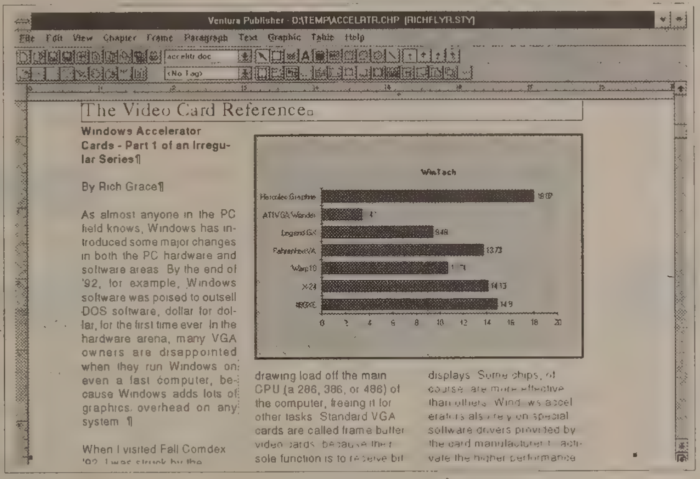
Ventura provides something called a Width Table, which places default typeface handling values in the various styles accompanying the program. Unfortunately, the default width table isn't adequate for users who have a sizeable font collection, and the program's startup slows dramatically as each style is loaded and initialized for all your fonts (at least, that's what I've managed to figure out). To fix this problem, the user must start the Manage Width Table feature under the File menu, create a new width table file, select each style sheet in turn and assign the new width table to each style, and save them out. It's a laborious process which, while fully documented and doable by any competent user, should be unnecessary. Once the process is done, Ventura loads much faster.

The key to understanding Ventura is its handling of Style Sheets, called "Tags." More than any other program, Ventura employs the technique of default designs for both documents and text paragraphs to speed design work. The new version of Ventura retains all the virtues of its previous versions, and provides a new and user-configurable button bar which automates many menu functions. In many cases (though not all) Ventura's new button bar enhances the use of the program. If you have the right tool selected, text attributes such as boldfacing, italicizing, subscripting, and superscripting can be changed with the click of a mouse.

As different original tool buttons (like Paragraph, Create Frame, and so on) are selected, different button functions will appear on the bar—while mirroring Ventura's method of disabling many menu functions if certain tools are not enabled. One aspect which may confuse users of previous versions is that if the button bar is enabled, you do not have access to the traditional Ventura toolbox; those tools are integrated onto the button bar!

This took some getting used to; it's a simple matter, however, to disable it and to run Ventura in its more conventional screen setup. Once you do so, your standard Tag window, from which you select your paragraph formats, will appear as normal, and tags can be selected by name. I sincerely wish Ventura would retain the display of the Tag list window while the button bar is enabled. It's much more convenient than scrutinizing buttons on a high-res screen.

One feature I've always appreciated about Ventura is its OLE support. It was one of the first major Windows apps to support this capability (in its very first Windows version!) and it supports all OLE client functions including the standard Paste Special, Paste Link, and Paste Embedded Object functions discussed earlier in this article. It works exceptionally well for all client operations, and demonstrates Ventura's commitment to the Windows platform.



The Video Card Reference

Windows Accelerator Cards - Part 1 of an Irregular Series¶

By Rich Grace¶

As almost anyone in the PC field knows, Windows has introduced some major changes in both the PC hardware and software areas. By the end of '92, for example, Windows software was poised to outsell DOS software, dollar for dollar, for the first time ever. In the hardware arena, many VGA owners are disappointed when they run Windows on even a fast computer, because Windows adds lots of graphics overhead on any system. ¶

When I visited Fall Comdex '92, I was struck by the

drawing load off the main CPU (a 286, 386, or 486) of the computer, freeing it for other tasks. Standard VGA cards are called frame buffer video cards, because their sole function is to receive bit

displays. Some chips, of course, are more effective than others. Windows accelerators also rely on special software drivers provided by the card manufacturer to activate the higher performance

FRAMES—VENTURA'S ACE IN THE HOLE

After working with Ventura's frame handling capabilities combined with OLE, I've found that Ventura's handling of frames and their various specifications, while not as intuitive as the implementation in Quark XPress, is the most powerful in this software category. An entire menu is devoted to precise adjustments of text and picture frames (which, of course, is also available on the button bar). For example, Ventura's Sizing and Scaling feature enables the user to retain exact aspect ratios of any graphic, regardless of the size of the frame containing it. While you will probably need to experiment to get it right, once you do you can save the settings as a Tag (just like a paragraph format) and use them in any graphic frame!

You can also define borders around any frame, or attach top, bottom, or side borders. As with Quark, you can also define background colors for use in a frame (see illustration). The selection of colors offered in this feature is fairly limited—essentially, just the basic eight spot colors with various shadings. Once you've loaded a text file or picture, the filename is listed in the "File(s)" window, and can be loaded into the frame with a mouse click. In this way, you can freely experiment with layout elements in various frame positions.

Compared to FrameMaker, Ventura goes out of its way to make page layout work easy and productive. Text in a column is automatically wrapped around a frame in which you're going to place a graphic. Once you've selected a document template from the substantial collection provided by Ventura (and the collection is so extensive many users will never feel the need to create their own), text can be imported and is automatically flowed onto the frames and columns of the document, with additional pages added as needed.

Many basic functions in Ventura cannot be Undone: selecting text and using All Caps, Capitalize, or No Caps, even by mistake, means a substantial headache if you need to recover your previous work. Because of this, you need to be very careful before you use a feature in some situations. Often your only recourse is to Revert to the previously saved version of the document. It's not what an experienced user of other packages would look for, but it serves the same function as an Undo for some operations.

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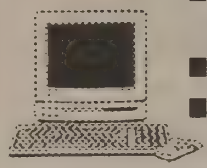

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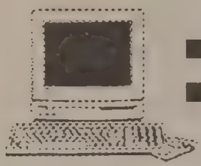

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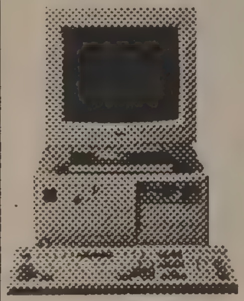

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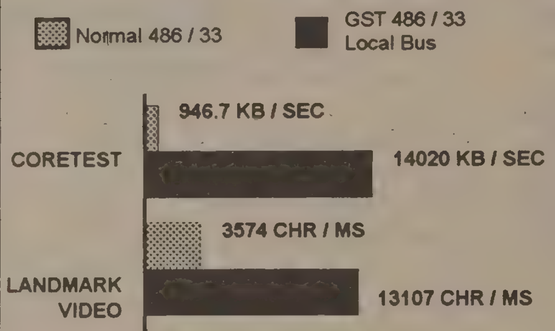

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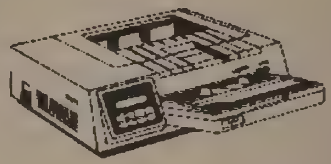

$599.00

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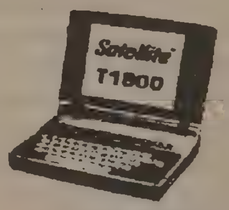

- 386SX/20MHz
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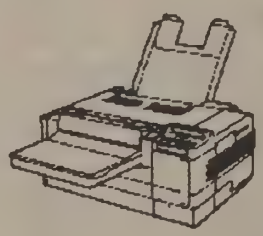

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(714) 543-4922
Lyon & Edinger
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SAT 10:00-5:00
FAX:(714) 543-6349

VAN NUYS
6265 Sepulveda Blvd., #15
(818) 781-0698
Next to Rogersound
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FAX:(818) 781-4203

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(714)489-0226
In Price Club Plaza
M-F 9:00-6:00
SAT 10:00-5:00
FAX:(714)489-0591

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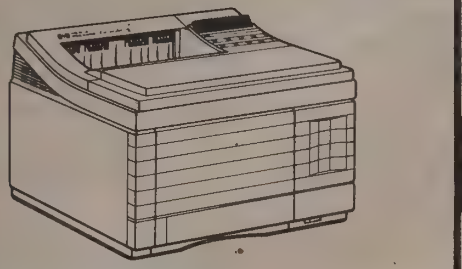
SAT 10:00-5:00
FAX:(619) 552-9016

Stock may not be available in some stores --- Master Card, Visa accepted --- Prices good thru March 31st, 1993 --- Prices subject to change without notice

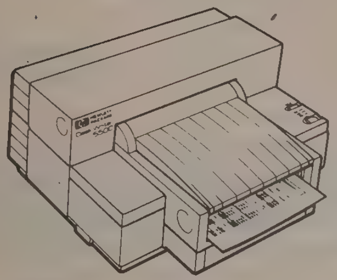
HP SELECTION...

HP LASERJET 4



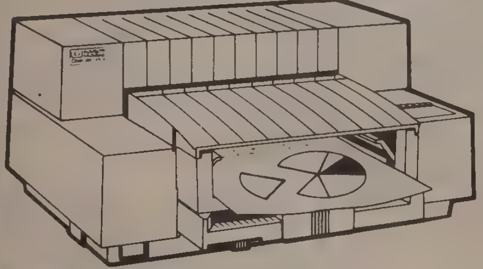
- 600 dpi print quality at a 300 dpi price
- Resolutuion enhancement technology and microfine toner for superior output quality
- Fast 8-ppm printing for complex documents
- Ideal for Windows environment

HP DESKJET 550C



- 300 dpi
- Laser quality black and color printing

HP DESKWRITER



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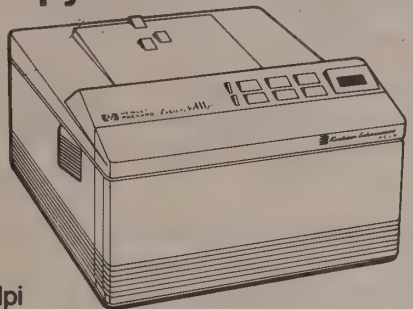
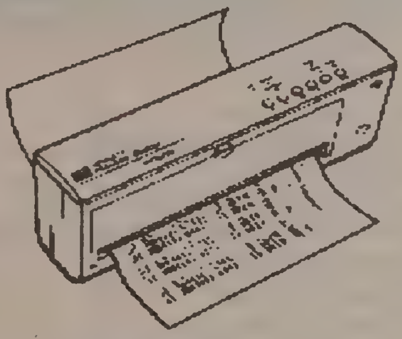


- 300 dpi
- PCL 5 scalable typesets
- HP III printer features

HP DESKJET PORTABLE



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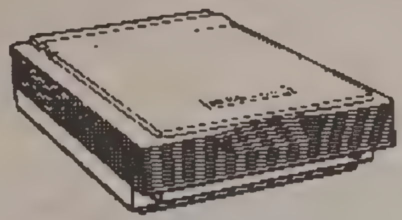

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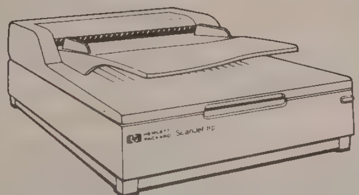
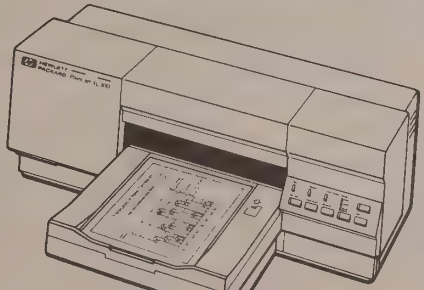


- 8 bit Grayscale
- Image editor
- Full page scan

HP PAINTJET XL-300 COLOR PRINTER



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Full Size Vertical Case
230 W. Power Supply
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Serial Mouse

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Serial Mouse

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Focus 9000 124 Key Keyboard

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486DX-50 EISA Intel EISA Controller Chipset

A.I.R. EISA Motherboard
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ATI Graphics Ultra-Pro VGA
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(1280 x 1024, 0.28 DPI)
Focus 9000 124 Key Keyboard

$3859

486DX(2)-33/66 VLB VESA-VL STANDARD

A.I.R. Local Bus Motherboard
4 MB RAM
256 KB Cache
1.2 & 1.44 MB Floppy Drive
2S/1P/1G
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Vertical Case (230 W. PS)
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(1 MB Installed)
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the button bars. The default settings on the button bar can be changed by dragging button icons on or off the bar; the defaults do not contain all the buttons available, so users can experiment with them. Some buttons, such as Define Colors, can be used in almost every menu group.

Incidentally, Ventura's color capabilities have been dramatically improved, with complete support for both Pantone solid and Pantone process colors, as well as the standard CMYK and RGB color mixing models. It's a good idea, however, to have a Pantone color selector card set handy when you experiment with the display colors; color representations on the screen will probably not match what you'll have on paper.

Ventura provides a button for inserting Index entries into your document; index entry markers can only be inserted into your document with the Text tool selected. Because of this, Ventura forces you to manually key in the text for the reference, or to first select the word or phrase and copy it to the clipboard. You can then insert the text into the Primary Entry or Secondary Entry sections of the Index dialog box. You can also create index entries based on the See Also.... method, as cross-references to related entries. When you generate your index, Ventura does not automatically display your Index file for viewing. The whole indexing system is quite serviceable, but imposes extra steps for the insertion of each entry marker, and doesn't compare to the speedier and more flexible indexing facilities of FrameMaker. It's not as simple to work with, and it's more time-consuming.

Tables of Contents, however, are nicely handled. TOCs are generated most quickly from using the Style Tags (known in most other programs, of course, as Style Sheets) for the appropriate chapter headings and paragraph numberings you wish to include. Doing so ensures a speedy and complete generation of a TOC.

In the final result, Ventura's long-document capabilities are about as substantial as FrameMaker's. The complexity of many of the program's long-document capabilities, however, especially concerning the structure of dialog boxes and command hierarchies, presents a different problem for the user from FrameMaker's non-Windows-standard interface.

While Ventura's button bar improves the ergonomics of the program, a very substantial commitment is still required for most users to master VP. The entire methodology of the program needs to be streamlined, and adding a button bar isn't enough.

It's a good start, though, and considering Ventura's large and loyal following it's understandably difficult to introduce traumatic changes to the old ways of doing things. One thing I'd like to see: allowing the moving of frames off the actual page on the screen onto the "pasteboard," enabling a larger effective working space. There's just not enough elbow room when a page gets crowded with various elements.

Conclusion

Along with the soon-to-be-released PageMaker 5.0 (see sidebar), it's safe to say that high-end DTP has become a hotly competitive market on the PC. All the major packages are represented with highly respectable versions of their product.

FrameMaker, in particular, does a magnificent job in its interplatform transfer capabilities and its consistency across platforms (while suffering the tradeoff of a nonstandard Windows interface). The upstart Quark XPress provides wonderful page layout flexibility but suffers from some output problems. Ventura, having undergone a substantial facelift, retains the virtues that made it great while also retaining some annoying quirks.

What's the best? I honestly can't say. Each program has its own personality and way of doing things. I hope I've managed, however, to convey some of the flavor of each package and its respective appeal. ■

PageMaker 5 What's New?

As of this writing, PageMaker 5.0 is still in late beta stages—and thus we can't do a fair performance evaluation or discuss the totality of the functions of the new version. What we can do is give those readers who haven't seen accounts of PageMaker 5 some idea of what the new version has to offer.

For the most part, PM5 is pretty much the same as the old version in its basic operation. It still embraces the Pasteboard metaphor, and allows you to dynamically place various text and graphics objects directly on the page and pasteboard, and resize them at will. It still allows for only one master page per document. The program, in short, is still distinctly recognizable. I've felt for awhile that PageMaker's teeth have been growing longer as the competition grew fiercer. What is new?

•OLE Client Support: Long overdue, OLE support allows PageMaker users to adapt text and graphics objects without tedious cutting and pasting, and the cumbersome back-and-forth movement between applications is a thing of the past.

•A revamped printer engine, which according to Aldus dramatically speeds up print times in both PostScript and PCL printers. The Print dialog box has been changed. Multiple page ranges or disconnected pages can now be selected.

•Aldus Extensions: Also long overdue, this feature has been available on Macintosh version 4.2 for a year now. Extensions for Drop Caps, automated Bullets and Paragraph Numbering, Expert Kerning (a more refined Tracking feature), and many others will finally be included in the imminent PM5. Expert Kerning will work only with Adobe Type 1 fonts, and not with True Type.

•The Control Palette: While superficially similar to that in Quark XPress, and embracing much of the same functionality, the floating Control palette enables the user to avoid pulling down menus to execute type handling functions, including rotation, resizing, skewing and cropping of objects, and typeface selection.

By the way, Aldus has finally fixed that annoying pull-down font menu—you know, the one that scrolls down if you have a lot of fonts, but you can't see them past the bottom of the screen? They've finally set it to display all your typeface names in several columns. Quark, by the way, also suffers from this minor but irksome problem.

•Library Palette: Similar in function to the Tag and File palettes in Ventura Publisher, the Library palette allows you to manage collections of often-used objects in a handy list, and to drag-and-drop between the palette and the pasteboard or document.

There's quite a bit more, but the overall impression is that this is not a radical upgrade; many new features, plus a major rewrite of the printing system have been added, but PageMaker veterans should be very comfortable with the changes in the new version. Aside from a lack of multiple master pages and background colors for frames (since frames don't really exist in PageMaker), PM5 substantially matches Quark in its market segment. A complete review will appear in a future issue.

—Rich Grace

RESOURCES

Calendar Of Events

CONFERENCES, SHOWS, AND OTHER SPECIAL EVENTS

MARCH

March 21 Computer Show & Sale. Civic Aud., Oxnard. MarketPro Shows. Call: (415)388-8893.

March 22–24 1993 International DataEase Users Conference. Orlando, FL. DataEase International. Call: Randy Newell, (203)365-2308.

March 27 Computer Show & Sale. CSUN, North Campus. Richard James Corp. Call: 1-800-433-7469.

March 28 Computer Show & Sale. Antelope Valley Fairgrounds. MarketPro Shows. Call: (415)388-8893.

March 30–April 1 VOICE '93: Spring Conference & Exposition. San Diego. Advanstar Expositions. Call: 1-800-777-4442.

APRIL

April 3–4 Computer Show. LA Fairgrounds, Pomona. Computer Marketplace. Call: 1-800-800-5600.

April 4 Computer Show & Sale. Glendale Civic Auditorium. Richard James Corp. Call: 1-800-433-7469.

April 5–7 Apple Enterprise Computing Conference. San Francisco. Apple Computer. Call: 1-800-841-AECC.

April 6–8 International Spectrum '93 Exhibition And Conference: BusinessPerson's Computer Show. Anaheim. IDBMA. Call: 1-800-767-SHOW.

April 10 Computer Show & Sale. Anaheim Stadium, indoors. Richard James Corp. Call: 1-800-433-7469.

April 10 Computer Show & Sale. Ventura Fairgrounds. MarketPro Shows. Call: (415)388-8893.

April 18 Computer Show & Sale. Antelope Valley Fairgrounds. MarketPro Shows. Call: (415)388-8893.

April 18 NOCCC Computer Swap Meet. Fullerton City College. North Orange County Computer Club. Call: (714)521-6915.

April 24 Computer Show & Sale. CSUN, North Campus. Richard James Corp. Call: 1-800-433-7469.

April 25 Computer Show & Sale. Scottish Rite Center, San Diego. MarketPro Shows. Call: (415)388-8893.

April 26–29 NCGA '93 Conference: Computer Graphics Solutions—Applications For Implementation. Philadelphia. NCGA. Call: (708)698-9600.

April 26–30 Win-Dev: The International Developers Conference For Windows. Boston. Center for Software Development, Boston University. Call: (508)649-4200.

April 27–30 Incotek '92: Exhibition And Conference For Telecommunications And Information Systems. Warsaw, Poland. Global Technologies. Call: Karen Ventimiglia, (202)797-3782.

MAY

May 1 Computer Show. Sherman Entertainment Center, Reseda. Computer Marketplace. Call: 1-800-800-5600.

May 2 Computer Show. Sequoia Conference Center, Buena Park. Computer Marketplace. Call: 1-800-800-5600.

May 2 Computer Show & Sale. Glendale Civic Auditorium. Richard James Corp. Call: 1-800-433-7469.

May 3–5 Windows Objects: Object Linking & Embedding 2.0 Developers Conference. Seattle. Microsoft. Call: 1-800-421-2388.

May 3–6 LotusWorld '93: The Official Conference And Exhibition For Users And Developers. Boston, MA. Lotus Publishing Corp. Call: 1-800-524-1857.

May 3–7 DB/EXPO. San Francisco. NDN Enterprises. Call: (415)966-8934.

May 4–6 Digitalk's 10th Annual Developers Conference. Costa Mesa. Digitalk. Call: (310)645-1082.

May 8 Computer Show & Sale. Anaheim Stadium, indoors. Richard James Corp. Call: 1-800-433-7469.

May 8 Computer Show & Sale. Ventura Fairgrounds. MarketPro Shows. Call: (415)388-8893.

May 11–13 Computer Storage Exposition And Conference. Anaheim. Kotch & Poliak. Call: (212)486-6186.

May 11–13 SunWorld '93 Conference And Expo. San Francisco. World Expo Corp. Call: 1-800-225-4698.

May 15–16 Computer Show. LA Fairgrounds, Pomona. Computer Marketplace. Call: 1-800-800-5600.

APRIL 3–4

COMPUTER SHOW

Pomona

Computer Marketplace computer shows feature over three hundred exhibits with thousands of products. They are now featuring seminars open to all users—from the beginner to the advanced computer user. Admission is $7.00 and shows are from 10:00 am to 5:00 pm. Los Angeles County Fairgrounds (Fairplex), Pomona. Call: 1-800-800-5600.

May 19–21 Meckler's 4th Annual Virtual Reality '93 Conference & Exhibition. San Jose. Mekler Conference Management. Call: 1-800-635-5537.

May 22–23 Computer Show & Sale. CSUN, North Campus. Richard James Corp. Call: 1-800-433-7469.

May 23 Computer Show & Sale. Scottish Rite Center, San Diego. MarketPro Shows. Call: (415)388-8893.

May 25–27 NeXTWORLD Expo And Conference '93. San Francisco. DCI. Call: 1-800-767-2336.

May 29 Computer Show & Sale. Anaheim Stadium, indoors. Richard James Corp. Call: 1-800-433-7469.

May 30 Computer Show & Sale. Antelope Valley Fairgrounds. MarketPro Shows. Call: (415)388-8893.

CLASSES, SEMINARS, AND WORKSHOPS

MARCH

March 20 DOS Class. Monrovia. The Organizers. Call: (818)303-3311.

March 20 Windows 3.1 Class. Monrovia. The Organizers. Call: (818)303-3311.

March 22 Word For Windows Class. Burbank. Unique Learning Centers. Call: (818)843-8119.

March 23 Data Entry And Management Workshop. Glendale. Alpha Computer Systems. Call: (818)241-0810.

March 24 Lotus 1-2-3 For Windows Class. Burbank. Unique Learning Centers. Call:

Continued

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1993 SHOW DATES

April 3 & 4
Saturday & Sunday
POMONA - L.A. County Fairgrounds (Fairplex)
Exit Highway 10 at Fairplex Drive. Go North to Mckinley, turn right. Turn Left on White Avenue to Gate 14.

May 1
Saturday
RESEDA - Sherman Entertainment Center
From 101 Freeway, take Reseda off ramp, turn left (if traveling East) on Reseda Blvd. to Sherman Way, turn right, one block to Canby Street. 18430 Sherman Way.

May 2
Sunday
BUENA PARK - Sequoia Conference Center
Take the Beach Blvd. Exit off the 91 Freeway, go one block North to 7530 Orangethorpe.

May 15 & 16
Saturday & Sunday
POMONA - L.A. County Fairgrounds (Fairplex)

June 5
Saturday
POMONA - L.A. County Fairgrounds (Fairplex)

June 6
Sunday
BUENA PARK - Sequoia Conference Center

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Calendar Of Events continued

(818)843-8119.

March 27 Advanced WordPerfect 5.1 Class. Monrovia. The Organizers. Call: (818)303-3311.

March 27 Intermediate Lotus Class. Monrovia. The Organizers. Call: (818)303-3311.

March 29 Windows Class. Burbank. Unique Learning Centers. Call: (818)843-8119.

March 30–31 An Intro To Networking PCs With Novell Class. Los Angeles. Center for Advanced Professional Development. Call: (714)261-0240.

April 3 Excel 4.0 Class. Monrovia. The Organizers. Call: (818)303-3311.

April 15–16 Windows Programming Using C++ Seminar. Santa Clara. Boston University. Call: (508)649-4200.

April 17 Advanced Lotus Class. Monrovia. The Organizers. Call: (818)303-3311.

APRIL 18

NOCCC FAIR & SWAP MEET

Fullerton City College

The North Orange County Computer Club is presenting the 29th NOCCC Computer Fair and Swap Meet (8:00 am to 2:00 pm). The event will include a swap meet, club pavilion, and workshops. Computer User Groups from throughout Orange County will be set up in the pavilion; workshops will demonstrate how to update and add boards to your computer. Call: (714)521-6915.

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GXi te	Level 29 1280 x 1024 65,536 Color	$1824
	Level 20 1280 x 1024 16 Color (WIN)	$595
GXi lite	Level 21 1280 x 1024 16 Color (CAD)	$695

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- Enhanced 101 Keyboard
- Mid Tower Case & 230W PS
- Super VGA Monitor & Card
  (16 Bit 1MB, .28 Dot 1024 x 768)

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486/66MHz DX2 .... add $265

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- 1.2 and 1.44 FDD
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- Mini-size tower case, 230 Watt P.S.
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- Mini tower case, 230 Watt P.S.
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- **170 MB IDE** 15 ms HD drive w/controller
- 2-serials, 1-parallel & 1-game ports.
- 101-key enhanced keyboard.
- **4 MB RAM** 70 ns, exp. to 32 MB.
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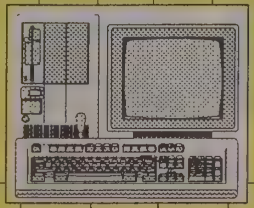

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- 1.2 and 1.44 FDD.
- **170 MB IDE** 15 ms HD drive w/controller
- 2-serials, 1-parallel & 1-game ports.
- 101-key enhanced keyboard.
- **4 MB RAM** 70 ns, exp. to 32 MB.
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- **256 K Cache** / Math Co-processor incl.
- 1.2 and 1.44 FDD.
- **170 MB IDE** 15 ms HD drive w/controller
- 2-serials, 1-parallel & 1-game ports.
- 101-key enhanced keyboard.
- **4 MB RAM** 70 ns, exp. to 32 MB.
- SVGA 1024x768 14" .28 dot monitor
- **32 Bit Local SVGA** 1MB Win-Accelerator.

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486DX-50 MHz VESA Local Bus (2 VLB)

- Mini tower case, 230 Watt P.S.
- Intel 486DX-50 MHz, clock, cal., batt.
- **256 K Cache** / Math Co-processor incl.
- 1.2 and 1.44 FDD.
- **170 MB IDE** 15 ms HD drive w/controller
- 2-serials, 1-parallel & 1-game ports.
- 101-key enhanced keyboard.
- **4 MB RAM** 70 ns, exp. to 32 MB.
- SVGA 1024x768 14" .28 dot monitor
- **32 Bit Local SVGA** 1MB Win-Accelerator.

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- Intel 486DX-66 MHz, clock, cal., batt.
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- 1.2 and 1.44 FDD.
- **170 MB IDE** 15 ms HD drive w/controller
- 2-serials, 1-parallel & 1-game ports.
- 101-key enhanced keyboard.
- **4 MB RAM** 70 ns, exp. to 32 MB.
- SVGA 1024x768 14" .28 dot monitor
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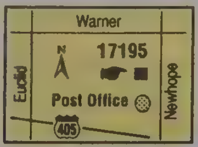

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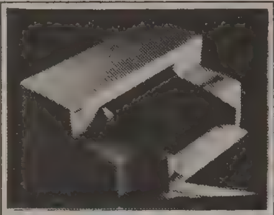

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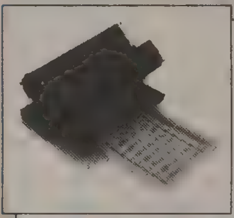

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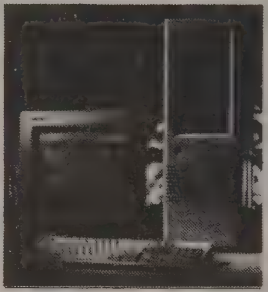

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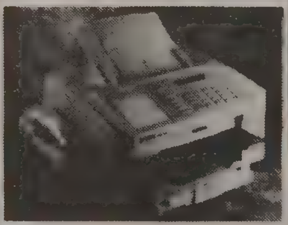

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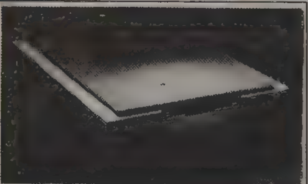

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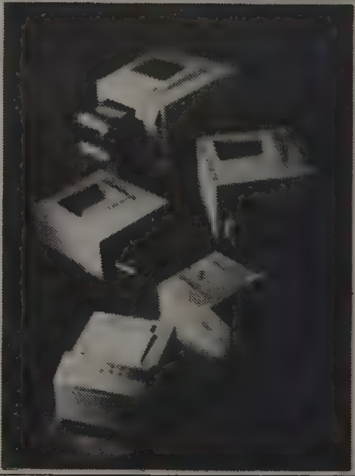

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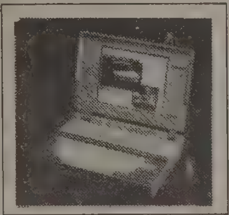

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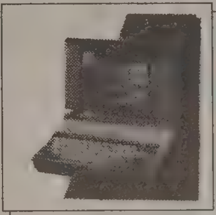

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The 3300SL uses Intel's Energy Saving i386SL long lasting battery life without sacrifincing processing speed.

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175MB 15ms Hard Drive
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SuperVGA Color Monitor
2 Serial/1Parallel/1Game
Enhanced 101 Keyboard
Hi-Res Mouse

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4MB RAM
1.2MB & 1.44 MB Drive
175MB 15ms Hard Drive
16-bit SuperVGA w/1MB
SuperVGA Color Monitor
2 Serial/1Parallel/1Game
Enhanced 101 Keyboard
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RESOURCE LISTING CHANGES

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Thank you,
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Blazin' Bytes BBS. (310)641-4678, (818)776-2784. 8-N-1. Sixteen lines, chat, email, games, sixty pubs/SIGs, great library. Free month. Sysop: Blazin' Barb. [Exp. #107.]

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VVBBS—Valley Village BBS. (213)628-9640, (310)276-9970, (818)763-8160. 8-N-1, 24 hrs., 16,800. 40+ new files every day, great games, friendly sysop. Free trial. [Exp. #108.]

213

The BCS BBS. (213)962-9202. Six lines, thousands of files, email to major networks. One week free when you mention *MicroTimes*. [Exp. #107.]

The Career Network. (213)629-1472. 5 pm–1:30 am, 300/1200/2400. Job hunting. Your resume can reach over 250 major employers each month. Sysop: Steven McCormick. [Exp. #108.]

The Communication-Fax-Link. (213)384-4394. Messages faxed, free, donations accepted. Voice: (213)384-0325. Sysop: Eric Schwartz. [Exp. #107.]

LAAUGLine. (213)387-1002. 24 hrs., 300/1200/2400. Amiga. Sysop: Thom Irwin. [Exp. #108.]

Twelve Steps BBS. (213)653-7508. 8-N-1, 24 hrs., AA, SAA, OA, NA, ACA, AL-Anon, etc. Free. Sysop: Gene G. [Exp. #108.]

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310

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Citizen America BBS. (310)453-7564. 8-N-1, 24 hrs., 300/1200/2400. Support for Citizen printers & computers. Sysop: Citizen America. [Exp. #108.]

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Drug Abuse Information (DIAMP). (310)825-3736. 8-N-1, 24 hrs., 300/1200/2400. Drug information, statistics, bibliographies, forums, email, downloads, and uploads. Free membership, reg. requested. Sysop: Greg Cason. [Exp. #108.]

LA Computer Society BBS. (310)475-8720. 8-N-1, 24 hrs., 2400 only. Full access to Computer Society members ($36/yr), message bases, SIGs, and club information. Sysop: Debbie Rhodes. [Exp. #108.]

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South Bay Commodore Users Group (SBCUG). (310)973-4949. 24 hrs., 300/1200/2400.

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BBS SPOTLIGHT

By John Wolcott

NOCCC—BBS Strengthens User Group

Many computer organizations or clubs sponsor some sort of BBS; some on more of a grand scale than others. If you have resisted user groups and their associated BBSes, you may be missing out on some important computer expertise readily available to you. You may also have some terrific talent to share with others that is yet untapped.

This month's BBS Spotlight shares information regarding the BBS of an Orange County user group. The North Orange County Computer Club (NOCCC) holds regular monthly meetings that bring together computer-literate individuals anxious to share their skills. The monthly meetings feature guest speakers who address the latest in computer development. NOCCC also sponsors special interest group (SIG) meetings for beginning and advanced modem instruction, artificial intelligence, computer aided investing, programming, multimedia, desktop publishing, satellite image capture, and software usage. If you miss not subscribing to all of the top computer publications to keep abreast of "up-to-the-minute" user evolution, such a user group may be just the thing for you.

A computer club BBS directly complements its services. For example, you may use the BBS to communicate by email with other members to discuss SIG topics. This is a great way to tide yourself over for needed information or just touching bases with members between meetings. The club's president, George Margolin, exhibits a great deal of enthusiasm for club activities. George commented, "We're just friends helping friends." With such a great attitude from club leadership, how could you go wrong? The NOCCC meets in the Hashinger Auditorium at Chapman University, 333 N. Glassel in Orange; usually on the first Sunday of every month. Club membership fees are $25.00 per year and include a subscription the club's newsletter.

The BBS sysop (system operator) is Bert Langer. Bert believes that a BBS should provide information and file services to anyone who can use them. Bert remarked, "What could be better than a lending library where nobody can steal a book? A BBS should be easily accessible and helpful for all who call. We have no security levels. Everyone is welcome here."

The NOCCC BBS is full-featured for message base and file transfer use. It runs on PCBoard software, which is a commercial BBS package from Clark Development in Utah. Five public phone lines and two "members only" lines are connected to Zyxel V.32bis and US Robotics Dual Standard modems and supported by seven networked computers. This allows callers access at 14,400 baud. If you've had the pleasure of downloading at this speed, you know how wonderful it is to transfer at a higher rate than the standard 2400 baud.

The file library boasts over ten thousand files available for download from two 1.2GB drives and a CD-ROM drive. Bert stays on top of the latest public domain and shareware files available by calling other top BBS services, downloading new software as it becomes available, and posting the files in the NOCCC BBS library on a weekly basis.

Logging onto the BBS presents you with all of the latest club bulletins and board information. You may view all of these messages or jump to the main menu. From the main menu you may access the message bases, join a conference, or use the file library. The message bases allow you to "read only" your mail or posted messages.

Conferences are divided into five categories, ranging from technical discussion to general message communication. The file library effectively searches for filenames or text strings in the file description. For example, if you were looking for a Windows-based "trashcan" program, you

Continued

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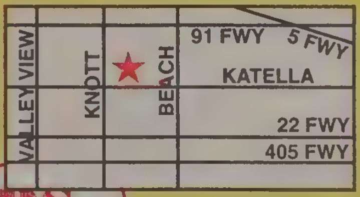

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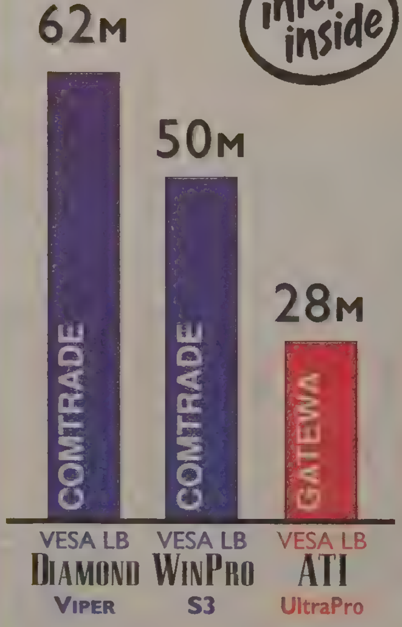

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BBSes

Graphics and library. Sysop: William Bogart. [Exp. #109.]

Tasmania BBS. (310)437-8460. 8-N-1, 300/1200/2400. Programming, software troubleshooting, downloadable source code. InfiNet node 34, WWIV 4.22. Free. Sysop: The Tasmanian Devil. [Exp. #108.]

Xchange. (310)452-3374. 8-N-1, 300/1200/2400/9600. All ads, all free. Classifieds for cars, electronic jobs, etc. [Exp. #109.]

714

Alpha/Net BBS. (714)830-0402 (14,400), 830-0311 (16,800). 24 hrs. Multi-node chat, Windows, games, comm., adult. Local echo mail. No ratio, free access. Sysop: Jamie Wilson. [Exp. #108.]

Amazon's Arena BBS. (714)840-1145. 1200/2400/9600/14,400. Specializing in GIFs and stories about Amazonically proportioned women. Sysop: Jim Woodard. [Exp. #107.]

Auto Shoppers BBS. (714)474-1446. 8-N-1, 300/1200/2400. Classified ads on cars, trucks, and vans. [Exp. #109.]

The Black Crystal BBS. (714)638-3581. 24 hrs., 1200/2400/9600/14,400. Online games, shareware, GIF files. Sysop: Larry Tournay & Chris Wilson. [Exp. #109.]

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The Drop Zone! BBS. (714)245-3854. Games, utilities, adult GIFs, nationwide echo-net, 1.2GB online. Reg required. Sysop: Rick Simmons. [Exp. #107.]

Happy Trails BBS. (714)547-0719. 2400/9600/14,400. MS-DOS only, 26 CD disks, 4GB of shareware. Membership $25/6 mo, $40/yr, $99/3 yrs. Sysop: Don Inglehart. [Exp. #109.]

The Hotline BBS. (714)857-0233, 256-8672. 8-N-1, 24 hrs., 300/1200/2400. PD software, matchmaking, 16 chat lines, social events. Sysop: John Coon. [Exp. #107.]

Infinity BBS. (714)379-1335. 20 lines, 4GB file library w/ adult GIFs, teleconference, email, games, Fidonet, and current weather. Sysop: Eric Robitaille. [Exp. #108.]

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would search for a file name TRASH*.* or search for text in the description using "trash." Either way, you would come up with a couple of file choices that could be flagged for download.

The NOCCC BBS can be accessed by calling (714)730-6743. Calling this main number will rotate your call to the first available line. If you elect to join the club, the "members only" lines will be made available to you. Current BBS news and club information are on a recorded message at (714)998-8080.

Combining BBS use with services offered by a well-organized user group can be a very beneficial experience. Whether you're just a beginner at modem and computer use or a real "guru," there's a wealth of knowledge to gain and share with fellow users. Dig in! ■

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What's Happening?

Check the MicroTimes Calendar of Events in this issue for computer-related classes, seminars, and shows in your area.

BBSes

2400/9600. Lots of games, utilities, graphics. No fee. Sysop: Mark Duvall, Jr. [Exp. #109.]

Midnight Mission BBS. (714)848-6808. 8-N-1, 24 hrs., 1200/2400/9600/14,400. Large game and GIF file areas. Full access with call back. Sysop: Marty Strech. [Exp. #108.]

Online Exchange. (714)870-4614. 2400–14,400. Shareware, large adult GIF file area, games, 2.5GB online. Sysop: Bob Aune. [Exp. #108.]

The PC Sports Connection. (714)533-6728. 8-N-1, 24 hrs., 300/1200/2400. Using Searchlight for unique games, fantasy leagues, and sports talk. Sysop: Keith Jefferson. [Exp. #107.]

SOCCC BBS. (714)373-0964. 24 hrs. Public domain & shareware for IBM, Apple & CP/M. Sysop: Brian A. Fliege. [Exp. #107.]

Spectre's OS/2 Technical Exchange. (714)751-9307, 751-6534. 8-N-1, 24 hrs. OS/2 only! National mags, CD-ROM, .5GB, no validation. Sysop: Jay Zebb. [Exp. #109.]

Trixie's Doghouse. (714)499-2864. 8-N-1, 24 hrs., 300/1200/2400/9600/14,400. Specializing in topics related to pets. Full access with callback. Sysop: Jason MacDonald. [Exp. #107.]

WinSIG BBS. (714)363-9802. 24 hrs., Windows 3.xx shareware. Sysop: Firas Bushnaq. [Exp. #108.]

805

The Farpoint BBS. (805)582-1621. 1200/2400/9600/14,400. IBM files, GIFs, WILDnet, THROBnet, SwingNET. Member of United Sysops Assoc. Sysop: Gary Bisner. [Exp. #107.]

Mount Olympus BBS. (805)297-5787. 24 hrs., 2400–38,400. Adult (21+), 1GB of high-quality adult-only files. No post-to-call ratio. New users get five days free d/l's. [Exp. #107.]

10 Bits! (805)297-8538. 24 hrs., 300/1200/2400. Instant access, uploads, downloads, email, fantasy role-playing games. Sysop: Jon Bek. [Exp. #109.]

818

AABBS (Asia America BBS). (818)284-4519. 24 hrs., 300/1200/2400/9600/14,400. Specialize in bridging the gap between Asian and American cultures, with a special focus on business. [Exp. #109.]

African American BBS! (818)793-9155. P-Funk online, sports, issues, health, business. Check it out. Free. Sysop: Jeffery Mitchell. [Exp. #107.]

Americom. (818)967-3108. 10 pm–8 am. Laserdisc! Video, file, radio communications, soundtrack info, and the arts. Using standard QWK offline mail system. [Exp. #107.]

The Annex. (818)786-5600. Multiline, games, chat, dating, CD-ROMs. All orientations, friendly. Sysop: Gregory Gooden. [Exp. #109.]

Atlantis, The Lost BBS. (818)859-6300. 2400/9600/14,400. Multiline chat, games, travel, scuba, forums, SIGs. Grand opening specials. Sysop: Ron DeRuyter. [Exp. #108.]

AutoComp. (818)767-8087. 300/1200/2400/14,400. Automotive classifieds with photos. Free access, one key logon. Sysop: J. Macoy. [Exp. #108.]

Bad-Boy's BBS. (818)846-9304. 24 hrs., 2400–16,800. Fido 1:102/842. 54+ online games, CD-ROM, No fees. Sysop: Brandon L. Heess. [Exp. #108.]

Chatterbox! BBS. (818)995-6959. 8-N-1, 24 hrs., 2400/9600/14,400. All adult, GIFs, shareware, freeware, multiline chat, library, games, and CD-ROMs. Sysop: Don Adler. [Exp. #109.]

Data Field BBS. (818)966-3305. 8-N-1, 24 hrs., 1200/2400/9600/14,400. OS/2, DOS, programming, graphics. Free. Sysop: David Levin. [Exp. #109.]

The Drawing Board. (818)965-6241. 8-N-1, 24 hrs., 1200/2400/9600. DTP, graphics, messages, and PD file sections. Sysop: Char Rice. [Exp. #108.]

Hottips BBS, Glendale. (818)248-3088, 1200–14,400. Five lines, 6000+ files, 1000+ users, 1GB online, QWK mail door, professional emphasis. RIME Network. Sysop: Michael D. Callaghan. [Exp. #108.]

Infinite Wisdom North. (818)951-2796, 951-6097. 8-N-1, 24 hrs., 1200/2400. Educational, science, engineering, online games, doors, chat, offline mail reads. Free trial account. Sysop: Tom Honles. [Exp. #108.]

INFOmania BBS. (818)791-8680. 8-N-1, 24 hrs., 300–14,400. Fidonet, Racenet, and Business-net conferences, DOS utilities. Free access on first call. [Exp. #107.]

KBTC BBS. (818)967-0701. 24 hrs., 2400/9600. Business, education, games, and IBM-compatible computers. Free access on first call. Sysop: James Kalinowski. [Exp. #109.]

Merchants Of Wonder BBS. (818)759-0060, 759-0097, 709-5638. 24 hrs. Online games, multiuser chat, matchmaker, forums, 5000+ files. Free trial. Sysop: Teresa Brandt and John Lipski. [Exp. #109.]

MUSO-BBS. (818)884-6799. 9600. Musician and music industry oriented BBS. Discussion forums, files, talent database. Sysop: Myles Wakeham. [Exp. #108.]

Panasia BBS, Glendale. (818)569-3740. 1200–14,400. Glendale, QWK/REP, Intelac RegHub, no fees. [Exp. #109.]

Parthenon BBS. (818)727-7070. 24 hrs., 300/1200/2400/9600/14,400. Utils, Windows, Toshiba stuff, Usenet feeds. Sysop: Steven Foster. [Exp. #109.]

Sahara Club. (818)893-1899. 8-N-1, 16,800. Off-road, timber, guns, and more. Fidonet, free. Sysop: Patrick Martin. [Exp. #108.]

Software Bank. (818)993-5516. 2400/9600/14,400. OS/2, Windows, Star Trek Fidonet echos, QWK mail, 13,000 files for D/L. Free. [Exp. #108.]

Text City RBBS. (818)566-6648. 2400. ASCII text files of all kinds: computer how-to, tutorials, fiction, historic text files, and more. Free. Sysop: Tim Chambers. [Exp. #109.]

Tin Shack BBS. (818)992-3321. Over 1.5GB of files. Local numbers available. Sysop: Guy Nohrenberg. [Exp. #108.]

Tri-City Apple BBS. (818)288-6540. 8-N-1, 24 hrs., 2400. Mostly Apple II, email, PD, UL/DL. [Exp. #108.]

24th Century BBS. (818)305-8300, 568-9259, 558-1176, 986-2872 .8-N-1, 24 hrs., 300/1200/2400. Multiline, chat, email, SIGs, databases, new user help. One month free. Sysop: DragonSeed. [Exp. #108.]

Valley Apple Computer BBS. (818)782-6471. 300/1200/2400. Friendly to beginners, uploading and downloading Apple II only. [Exp. #107.]

Wizardry BBS. (818)222-4444. 1200/4800/9600/14,400. Chat, games, U/L, D/L, mulitline. Free. [Exp. #109.]

909

The Digital Publishing BBS. (909)861-0250. 300/1200/2400/9600/14,400. Online publishing, programs, files. 386BSD, OS/2, Windows, DOS. [Exp. #108.]

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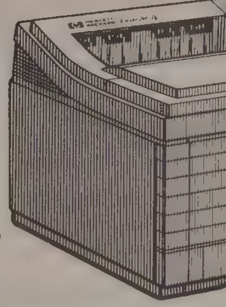

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ASSOCIATIONS

Black Data Processing Assoc., LA Chapter. Meetings: 4th Tues., 6:30 pm, ULTC, 7266 S. Figueroa St., Los Angeles. Call: (310)673-6522, 1-800-727-BDPA. [Exp. #107.]

Data Processing Management Association. Meetings: 2nd Thurs., 7:00 pm. An organization composed of all levels of management personnel who have an interest in the field of information processing. Call: (310)459-9680 or (213)225-9210. [Exp. #108.]

Independent Computer Consultants Association, Los Angeles Chapter. Meetings: 1st Thurs., 6:00 pm. Prepaid reservation, $25, or at the door, $35. The LA chapter provides referral services. Call: (213)872-1811. [Exp. #110.]

Orange County Association Of PICK Professionals. Meetings: 3rd Wed., 6:00 pm, Claim Jumper Restaurant, 18350 Brookhurst St., Fountain Valley. Dinner: Members, $20; nonmembers, $25. Without reservations add $5 additional. Call: (714)641-6347. [Exp. #110.]

Software Council Of Southern California. A nonprofit trade association whose membership is comprised of software development organizations as well as companies providing support and services to the local software industry. Call: (310)328-0043. [Exp. #112.]

USER GROUPS

ACCOUNTING

Cougar Mountain Accounting Software User Group. Call: (818)785-5880. [Exp. #111.]

Orange County ACCPAC Plus Accounting Software User Group. Meetings: 3rd Mon., 6:00 pm. Call: (714)535-5417. [Exp. #107.]

AMIGA

LAAUG—Los Angeles Amiga User Group. Meetings: 3rd Wed., 7:30 pm, Veteran's Memorial Auditorium, Overland Ave. & Culver Blvd. Many SIGs, rookies, monthly PD disks. Call: Kip Hammond, (310)390-3010. [Exp. #111.]

San Fernando Valley Amiga User Group. Meetings: 2nd Tues., 7:00 pm, Meeting Room, Fallbrook Mall. Call: Tony, (818)985-0476. [Exp. #107.]

South Orange Commodore Klub—SOCK. Meetings: 3rd Sat., 9:00 am, Computer Guild, Suite 1003, 24001 Via Fabricante, Mission Viejo. Supports Commodore and Amiga, new users SIG. Call: Don, (714)830-2430. [Exp. #109.]

APPLE

Orange Apple Computer Club. Meetings: 1st Sat., 9:00 am, Orange Coast College, Chemistry Lab. Apple II supported, presentations, and disk of the month. Call: (714)731-9243. [Exp. #112.]

Original Apple Corps, Apple II User Group. Meetings: 2nd Sun. Support for beginners through experts. Write: PO Box 90065, Los Angeles, CA 90009. Call: Fred Duffy, (310)475-8400. BBS: (310)454-4660. [Exp. #107.]

ATARI

ATESIG—Atari 8-Bit SIG. Meetings: 145 Surf Pl., Seal Beach. Cooperative user group for Model Railroad applications. Call: (310)430-5433. [Exp. #107.]

R.A.M. Atari User Group Of Ventura County. Meetings: 3rd Wed., 7:30 pm; Write: PO Box 112, Camarillo, CA 93011. Call: Tim, (805)389-0059. [Exp. #110.]

South Bay Atari Computer Enthusiasts (SPACE). Meetings: 2nd Tues., 7:30 pm, Lomita VFW Hall, 1865 W. Lomita Blvd. Active in all user interests since 1981. Call: (310)375-4839 (10am–10pm). [Exp. #112.]

CAD/CAM

Los Angeles Area AutoCAD User Group. Meetings: 4th Wed., 6:30 pm, Burbank Board of Realtor's Bldg., 2006 W. Magnolia Blvd., Burbank. Meetings feature tutorials, Q&As, demos, hands-on, BBS, and newsletter. Call: M. Berman, (818)762-9966. [Exp. #107.]

CLIPPER

Los Angeles Clipper User Group. Meetings: 4th Wed., 6:30 pm, Culver City. Techy talk and speakers. Call: Louise Astorga, (818)886-1574. [Exp. #107.]

COMMODORE

C128 West Commodore 128 User Group. Meetings: 3rd Wed., 18645 Arrow Highway, Rec. room. Free membership. Call: John, (818)331-1589; BBS, (714)598-1755 FidoNet. [Exp. #112.]

C-TUG (Commodore Technical User Group). Two meetings: 2nd Thurs., 2:00 pm, 2233 N. Tustin Ave., Orange, and 4th Sun., Seniro Citizen Center, 170 S. Olive. Speakers, demos, help with any Commodore and Amiga questions. Call: Lou Palush, (714)532-1802. [Exp. #109.]

South Bay Commodore Users Group. Meetings: 3rd Thurs., 7:00 pm, SEC Redondo Generating Station, 1100 Harbor Dr. (across from King Yacht Harbor). Support for 64/128 computers. Open to all users of Commodore Computer equipment and those who would like to receive or exchange information on programs, applications, or hardware. Call: (310)324-8357. [Exp. # 112.]

Southern California Commodore User Group. Meetings: 3rd Wed., 7:00 pm, Church of the Nazarine Christian School, Rm. 18, 15000 Studebaker Ave., Norwalk. Supports C64 & 128 models. Call: Bill Davies, (310)599-1913. [Exp. #112.]

CORELDRAW

Association Of Corel Artists And Designers, Long Beach/Orange County Chapter. Meetings: 1st Tues., Farmers and Merchants Bank, 12535 Seal Beach Blvd., Rossmoor. National organization that provides support for CorelDraw and its associated programs. Call: Ken Wong, (310)835-6000 or (714)821-5378. [Exp. #111.]

Corel (ACAD) User Group. Meetings: 2nd Tues., 7:00 pm, Glendale Federal Bank Building, 401 N. Blvd. Product demos, Q&A. Call: Art, (213)935-1958. [Exp. #111.]

dBASE

LA FoxPro User Group. Meetings: 3rd Tues., 7:30 pm. All levels welcome. Call: Chuck, (310)539-9439. [Exp. #109.]

DESKTOP PUBLISHING

Southern California Ventura Publisher User Group (SC–VPUG). Meetings: Last Tues., 7:00 pm, 401 N. Brand, Glendale, Glendale Federal Bank Building. Product demos, Q&As, library resources. Call: (818)955-5830. [Exp. #107.]

EPSON

Epson UG/Orange County. Meetings: 3rd Sat, 10:00 am, 2151 Michelson near JW Airport, Irvine. QX, PX, CP/M, VALDOCS—support, tech, periodical & disk library, and parts. Call: (714)893-3305 [Exp. #110.]

IBM & COMPATIBLES

Aldus PC SIG. Meetings: 4th Thurs., 7:00 pm, Graphix Zone, 38 Corporate Park Circle, #100, Irvine. Call: Rick Tuning, (714)549-7352. [Exp. #111.]

Coast IBM PC User Group. Meetings: Last Sat., 9:00 am, Science Hall, Orange Coast College, Costa Mesa. Speakers, BBS, software library, newsletter, and SIGs. Everyone welcome. Call: (714)843-2048. [Exp. #112.]

Greater South Bay PC User Group. Meetings: 2nd Thurs., 7:30 pm, Christ King Lutheran, 2706 W. 182nd St., Torrance. Visitors welcome. Call: (310)329-2804. BBS: (310)516-0834. [Exp. #107.]

Long Beach IBM PC And Compatibles User Group. Meetings: 3rd Wed, 7:00 pm, Los Altos Methodist Church, 5950 E. Willow St., Long Beach. Call: Jim Wells, (310)439-7114. [Exp. #109.]

Los Angeles Computer Society. Meetings: 2nd Tues., 7:00 pm, Culver City High School Cafeteria. Live presentations and giveaways. Meetings are free. Call: (310)473-6668. [Exp. #112.]

NOCCC Business & Spreadsheets SIG. Meetings: 1st Sun., 11:00 am, Chapman College, City of Orange. One of 22 SIGs. Call: (714)998-8080. BBS: (714)962-1857. [Exp. #108.]

Orange County IBM-PC Users Group. Meetings: 2nd Tues., 7:00 pm, Computer Learning Center, 1240 S. State College Blvd., Anaheim. Speakers, software, newsletter. Open to public, all welcome. Call: (714)990-0580. [Exp. #109.]

San Bernardino Personal Computer User Group. Meetings: Last Wed., 7:00 pm, CSU, San Bernardino, University Hall, Rm. 52. Just starting so need input on meeting topics and services desired. Call: Arthur Saltzman, (909)880-5755. [Exp. #110.]

Thousand Oaks Personal Computer Club (TOPCC). Meetings: 4th Thurs., 6:30 pm, Goebel Senior Adult Center, 1385 E. Janss Rd., Thousand Oaks. Call: (805)495-8325. [Exp. #111.]

TUG-NET. Meetings: 1st, 2nd & 3rd Thurs., 7:00 pm, Tektronix Corp., 21300 Erwin St., Woodland Hills. Enter through back door of building, press buzzer. Call: (818)249-1629. [Exp. #110.]

Valley Computer Club. Meetings: 1st Wed., 7:00 pm, Burbank Board of Realtors Bldg., 2006 W. Magnolia, Burbank. BBS, PD library, SIGs, newsletter. All welcome. Call: Wes Arnold, (213)221-4433; or Grayce Hruda, (818)842-3707. [Exp. #111.]

K-MAN

Southern California KnowledgeMan User Group. Meetings: 1st Wed., 7:00 pm, Honda North America, Bldg. 300, 700 Van Ness Ave., Torrance. Call: (213)662-9910. [Exp. #108.]

MACINTOSH

The American Film Institute Mac User Group (AFIMUG). Meetings: 2nd Mon., Apple Lab, AFI, Hollywood. TV, film, and video. Call: Dave Chadderdon, (213)856-7743. [Exp. #109.]

Los Angeles Macintosh Group (LAMG). Meetings: 3rd Thurs., 7:30 pm, Dept. of Water & Power, 111 N. Hope St. So. Cal's largest all-Mac user group meetings, monthly magazine, classes, PD software, and more. Call: (310)278-LAMG. [Exp. #109.]

Orange Apple Computer Club, Macintosh User Group. Meetings: 1st Sat., 9:00 am, Chemistry Lab, Orange Coast College. Presentations and club disks. Call: (714)897-8784. [Exp. #112.]

Original Apple Corps, Macintosh User Group. Meetings: 2nd Sun. Support for beginners through experts. Write: PO Box 90065, Los Angeles, CA 90009. Call: Fred Duffy, (310)475-8400. BBS: (310)454-4660. [Exp. #110.]

San Gabriel Valley Mac User Group. Meetings: 1st Thurs., 7:30 pm, Pasadena Central Library Aud., 285 E. Walnut. Call: (213)684-ICON. [Exp. #111.]

South Bay Apple Macintosh User Group. Meetings: Last Wed., 7:30 pm, Pacific Elementary School, 1214 Pacific Ave., Manhattan Beach. Call: (310)644-3315. [Exp. #109.]

Whittier Area Mac User Group. Meetings: 2nd Sat., 10:00 am, Christian Family Friendship, 11209 First Ave., Whittier. Call: (310)947-2447. [Exp. #111.]

NeXT

Southern California NeXTSTEP User Group. Meetings: throughout LA County. Call: Mike Mahoney, (310)985-1550 or Bob Desharnais, (213)343-2056. [Exp. #107.]

OS/2

LA OS/2 User Group. Meetings: 3rd Thur., 6:30 pm, IBM, 21041 Burbank Blvd., Woodland Hills. Call: Paul Duncanson, (805)584-8732. [Exp. #107.]

West LA OS/2 User Group. Meetings: 1st Wed., 7:30 pm, IBM, 2525 Colorado Place, Santa Monica. Catering to the technical needs of the corporate community. Call: Tracy Ragan, (310)285-3155. [Exp. #112.]

POWERBUILDER

Southern California PowerBuilder User Group. Meetings: 1st Tues. Technical presentations, networking, idea exchange. Call: (310)241-8181, ext. 36 or ext. 39. [Exp. #109.]

PROGRAMMING LANGUAGES

APL User Group—SoCal SIGAPL. Meetings: 2nd Wed., Los Angeles City College. Membership includes newsletter. Call: G. Smith, (213)560-2174. [Exp. #109.]

Forth Interest Group, Los Angeles Chapter. Meetings: 4th Sat., 10:00 am, Joslyn Center, 339 Sheldon St., El Segundo. Discussions, presentations, and tutorials include Forth, C, J, smalltalk, C++, OOP, hardware, algorithms, and operating systems. Call: John LuValle, (818)797-1820. [Exp. #109.]

SGML

SGML (Signal Generated Markup Language) User Group, Southern California Chapter. Discussions, presentations, tutorials, networking, and educational forums applying to SGML. Call: Roger Waston, (310)337-0309. [Exp. #112.]

TEXAS INSTRUMENTS

TI/944A Home Computer User Group. Meetings: 2nd Mon., 7:00 pm, Pomona First Federal, 9090 Central Ave., Montclair. Monthly newsletter, demos, and fairware. Call: (714)627-3403. [Exp. #110.]

UGOC. Meetings: 2nd Mon., Fidelity Federal, 13820 Seal Beach Blvd. Call: Joan, (714)633-5379. [Exp. #107.]

THEOS

THEOS User Group. Call: Fred Bellemy, (805)965-0265. [Exp. #108.]

UNIX

UNIX User Association Of Southern California. Meetings: 2nd Mon., 7:00 pm, New Horizons Learnings Center, 1231 E. Dyer Rd., Santa Ana. Call: Vince, (714)556-1220, ext. 126. [Exp. #107.]

VIDEO TOASTER

Digital Video Forum. Meetings: 3rd Wed., 6:00 pm, Pacific Video Products, 1100 Gene Autry Way, Anaheim. The Video Toaster and associated devices and software is the primary interest. Broad focus of group is the rapidly evolving world of Video/Graphics. Call: Scott Davis, (714)647-5822. [Exp. #112.]

TUG—Toaster Users Group Of Orange County. Meetings: 3rd Thurs. Call: Bruce, (714)894-1777. [Exp. #107.]

VIRTUAL REALITY

Virtual Reality Special Interest Group (VRSIG). Meetings: The Electronic Cafe, 1649 18th St., Santa Monica. Call: Dave Blackburn, (310)545-0369. [Exp. #110.]

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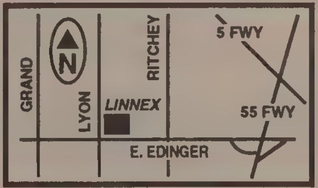

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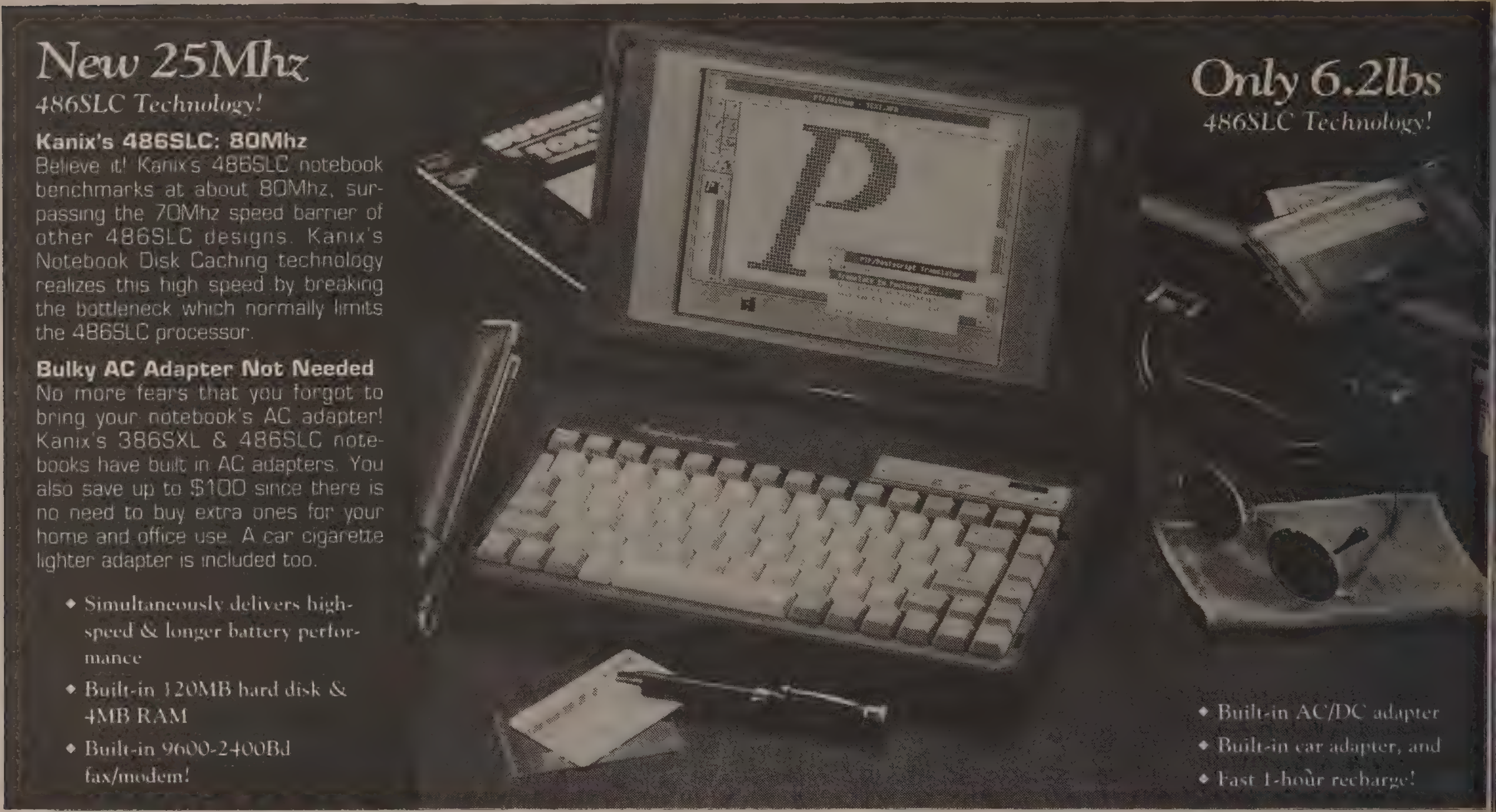

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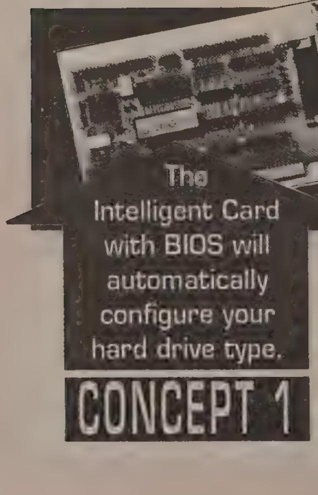

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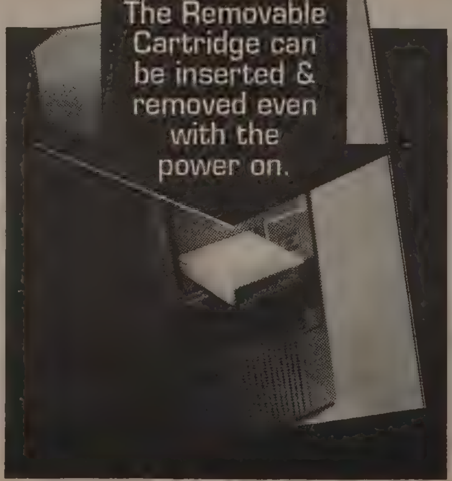

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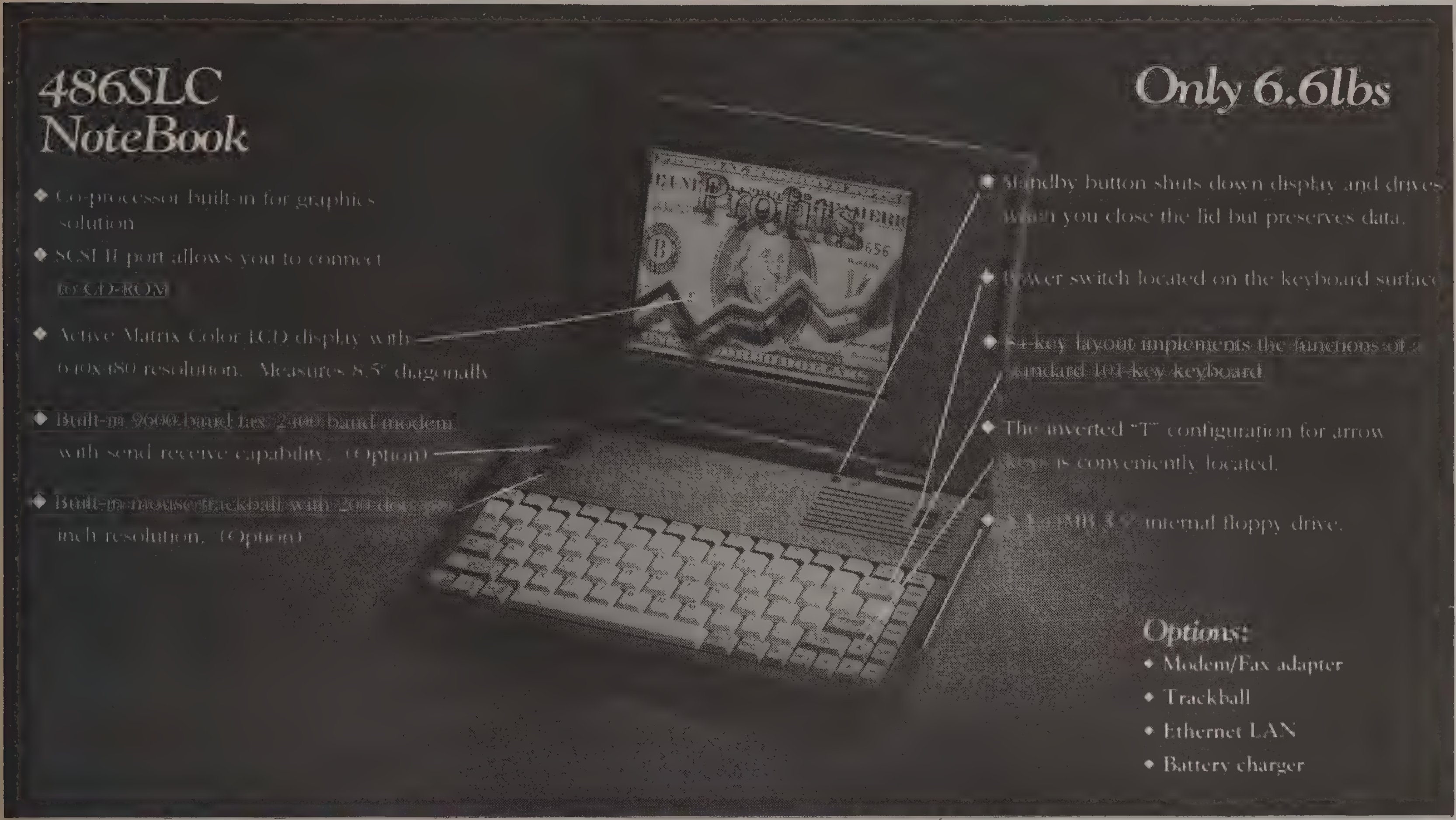

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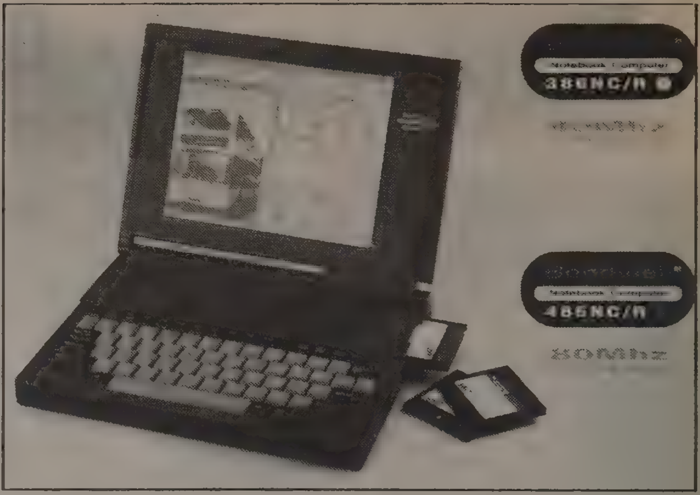

The Bondwell Removable Cartridge Hard Disk Notebook

Continued from page 42

RESOURCES:

Bondwell 486NC/R, $1899
Bondwell Industrial Co., Inc.
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ETC CA-1560 Monitor $599
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screen monitor for testing portable computers and find it a delight. I will give a more extensive evaluation of this monitor in a later column, but for now want to indicate that it is worth searching out if you are considering buying a moderately priced monitor.

While the keyboard on the 486NC/R is adequate, I don't care for its layout. To access PgUp, PgDn, Home, and End, you have to also use the awkward Fn key. While this is common, I will never select a keyboard layout that forces me into this kind of contortion—unless there are enough redeeming features. The double whammy on this machine is that even if you don't like the keyboard, you are stuck with it as there is no provision for adding a keyboard of your choice. I really wish Bondwell had provided a keyboard port so you could use an alternate keyboard.

Nevertheless, there are enough good qualities about this computer that you may still select it. You get a lot of computer for your money. The basic package comes with 4MB of RAM—which can be expanded. Additional memory must be installed by Bondwell or an authorized service center. You also get MS-DOS 5.0, Windows, a carrying case, a Hayes compatible 2400/9600 baud fax/modem and software that lets you send and receive faxes. All of this will cost you only $1899. A single serial port is provided. However, if you use Windows, you will not be able to use any other serial devices besides the mouse and the built-in fax/modem.

The most remarkable feature of this Bondwell is its hard drive system. There are other computers on the market these days with removable hard disks, but this is the first I have seen with a removable hard disk cartridge. The hard drive resembles a floppy drive in that you slip in a cartridge that holds 42MB of data. Bondwell delivers these cartridges with SuperStor installed so the disk space automatically jumps to 80MB. Additional cartridges ($109) are available. Access time to the hard drive is a fast 14.5 milliseconds. To conserve power, a program is included that lets you slow this access time down to either of three slower speeds. Even the slowest speed of 28ms is as fast as many hard drives.

The application possibilities are almost limitless. Complete security is easily achieved by removing the cartridge, which is smaller than a 3.5" floppy disk, from the computer. If you have either multiple users for a single computer or multiple units of this model computer, the removable hard disk offers many benefits. A single user can set up different hard disk cartridges for different applications, customers, or projects. If you never remove the cartridge, you have a fairly conventional 80MB hard disk computer. In any case, you never have to worry about outgrowing the capacity of your hard drive. This is more of a problem on portables than on desktop units as generic hard drives are not easily retrofitted into laptops and other portables.

Finally, adequate documentation is provided and an 800 number is provided in case of difficulty. ■

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Multi Media & beyond

In this month's section, Doug Nakakihara visits the graphics wizards at Valencia's Foundation Imaging, where the special effects for *Bablyon 5* are produced on the Amiga. Also, Jonathan E. begins his Multimedia 101 series, exploring the technology's potential and current reality.

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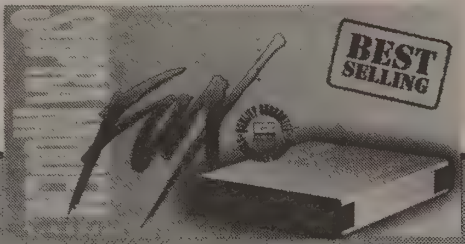

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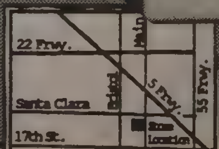

Multi & Media beyond

Babylon 5

Valencia's Foundation Imaging Brings The Amiga To Prime-Time TV

BY DOUGLAS J. NAKAKIHARA

Amid the commercial buildings in Valencia lies Foundation Imaging, the company behind all of the computer graphics for the Warner Bros. pilot TV program *Babylon 5* which aired locally this last February.

Although computer-generated effects are nothing new to television, this is undoubtedly the first time the special effects were handled by a desktop computer using essentially off-the-shelf software and hardware. Not just fictional equipment displays—actual full-screen visual effects.

The main players at Foundation Imaging are Ron Thornton (visual effects director), Paul Beigle-Bryant (computer imaging director), and Shannon Casey (producer). With the help of the Commodore Amiga and Lightwave, a 3-D modeling and rendering program bundled with NewTek's Video Toaster, they were able to create the show's visual effects for a fraction of the cost of traditional methods.

For example, the TV show *Star Trek: The Next Generation* relies heavily on the use of miniature models and motion control equipment to achieve its effects—a costly and time-consuming method. By comparison, the Lightwave-generated effects took about one-fourth the time it would have taken using models, and required less personnel. In fact, most of the 3-D objects were created solely by Ron Thornton.

SPECIAL EFFECTS BUILDING BLOCKS

Thornton is a veteran special effects model builder. This probably accounts for his ability to create such complex and vivid 3-D objects.

He explains, "You have to do something different from *Star Trek*. It's a different show, it's got to look different. So the first thing we didn't want to do was gray spaceships. We wanted to get them nice and colorful. We also didn't want blank black space, which is something else *Star Trek* always does. So we wanted the nebula in there. We wanted to get more of a feel like the covers of science fiction novels.

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Very colorful." Many of the ships also have large moving or rotating parts, something you don't see very often in other science fiction series.

For some of this colorful inspiration, Thornton tips his hat to a '60s science fiction TV show called *Thunderbirds*, which was centered around five spaceships, Thunderbird One through Five, each having distinctly different colors and designs. (He shyly admits that he does have Thunderbird One modeled in 3-D.)

Three-D objects are composed of one or more polygons, organized into logical groups called surfaces. These surfaces essentially act as building blocks which are pieced together to form the entire object. Each surface can have its own color, texture, reflective principles, etc. via image maps.

The *Babylon 5* space station required approximately two hundred thousand polygons, one hundred surfaces, and sixteen different image maps. Thornton uses a lot of surfaces in his models to give them a more realistic look. "When you cylindrical-map a sphere, the closer you get to the top, the more the images will squash up. So we separated the sphere up into different segments, so that you maybe map an image twelve times around the waist. Then you map it like: ten times here, eight times there, and six times there, and it doesn't squash up. So it retains a panel size throughout the whole thing, but still has the right sort of perspective."

Adds Beigle-Bryant, "The reason it looks complicated is because it *is* complicated."

Of course, not all of the effects are as complicated as they appear. In fact, some effects are quite simple, but still convincing. The nebula that appears in space is nothing more than a curved strip of polygons with an image mapped onto it. One ship's weapon power-up electrical discharge is really just a simple DeluxePaint anim played over and over. In the scene which includes hundreds of ships, the ships in the far background are actually very simple 3-D objects. Since these ships would appear as just blurred specs in the distance, there was no reason to waste resources on them.

All of this points to Thornton's knack for creating effects using an optimum amount of effort. It amounts to the difference of not only knowing what you can do, but also, whether you should do it. He attributes this talent to his cinematic background, something he finds lacking in many people doing computer-generated animations today.

According to Beigle-Bryant, one of Foundation's biggest problems is finding good people. "There are plenty of computer graphic animators, but there are very few cinema-graphic computer animators."

"Somebody who has experience in film," interjects Thornton. "Somebody who has basically been educated in how to compose a shot. Using the computer as a tool rather than an end unto itself."

FOUNDATION: THE EQUIPMENT ODYSSEY

Thornton first became aware of the Amiga while he was working in Canada and heard about the Mandela system, an Amiga-based system that allowed people to interact with computer graphics. When he got back to the States he was interested in getting a computer for himself, so he and Beigle-Bryant decided to check out the Amiga at an AmiExpo being held in Los Angeles. At the show, NewTek was demonstrating an Amiga with a prototype Video Toaster card. Recalls Thornton, "It looked like it was a crackin' good machine."

When the Video Toaster was finally released, Thornton caught a demo at a local Amiga dealer and was soon a new Video Toaster owner. However, the Toaster's main function, video switching, took a back seat as far as he was concerned; it was the 3-D rendering package, Lightwave, he was really after.

After a short while, Thornton was pushing Lightwave's limits. His goal was to make a space ship the same way he had done for other movies, trying to make it as real as possible. It took him a month to make what Paul calls "the great green ship," but he was convinced that Lightwave could generate acceptable computer graphics.

While still tinkering with Lightwave, Thornton kept sending his creations to NewTek and eventually got hired to work on Todd Rundgren's Video Toaster-based music video *Theology*.

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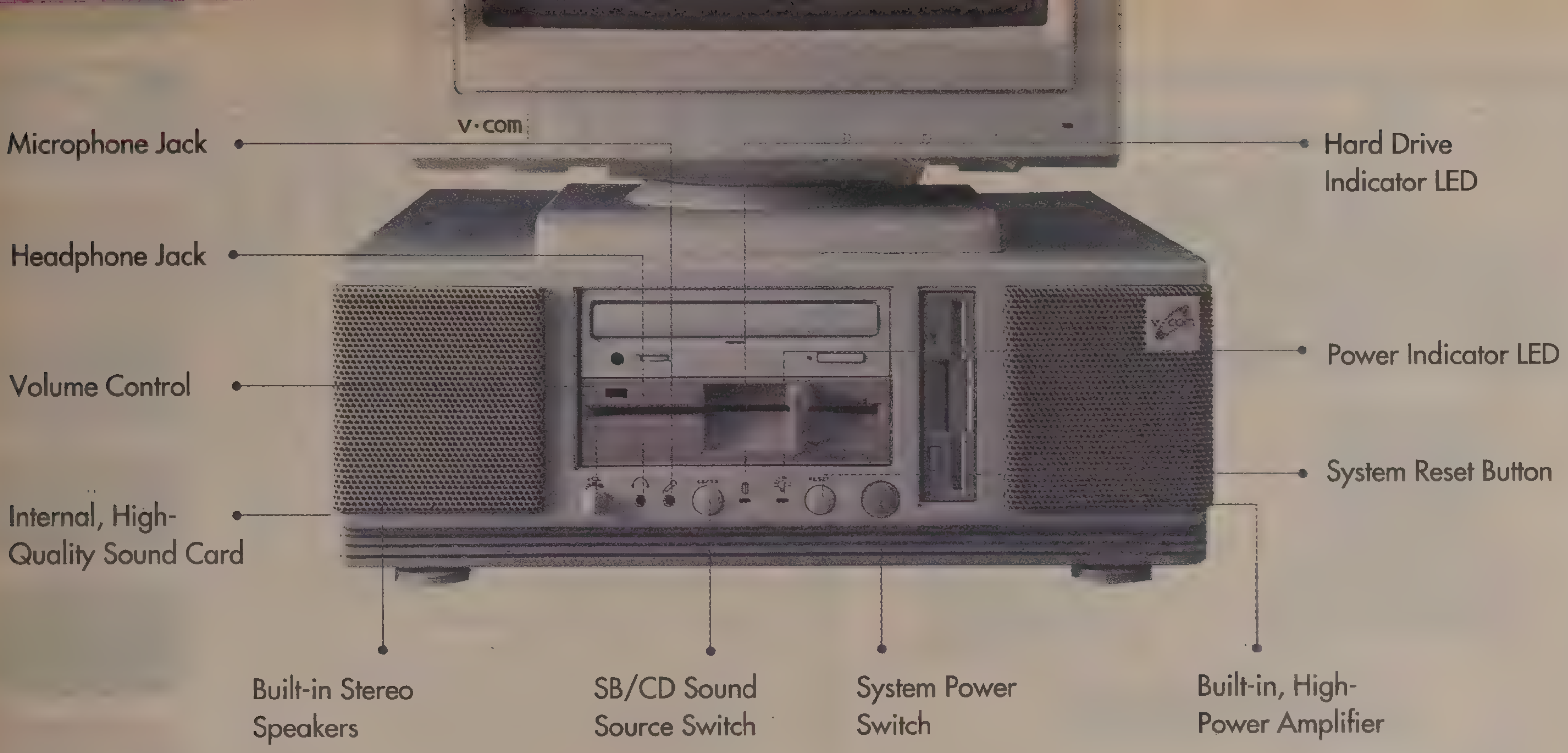

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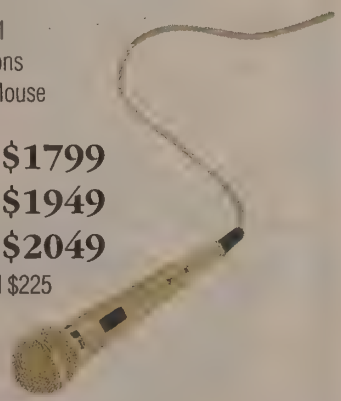

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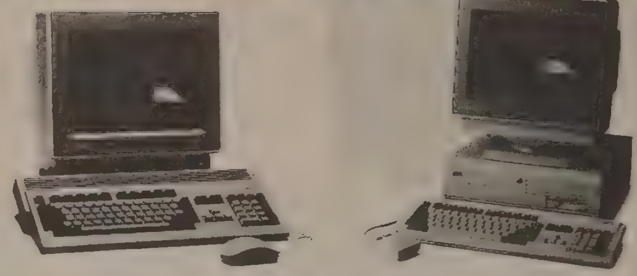

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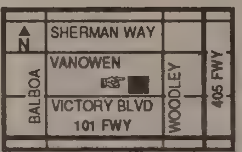

This in turn led to his introduction to the author of Lightwave, Alan Hastings.

Prior to the start of the *Babylon 5* project, there were in-depth conversations with Hastings. At the time, rendering speed was dog-slow and appeared to be an insurmountable obstacle to Lightwave's use in actual production. According to Thornton, "Alan just trashed himself. I don't know if the guy slept for three or four months." The work paid off in improved image quality and, as Thornton put it, "made it live and work." Rendering time was cut from hours to minutes. Not only did he optimize it, he also enhanced it and added custom effects just for the project.

My favorite new effect is called "lens flare." Lens flare normally results from reflections of light on a camera lens. Foundation's version of Lightwave reproduces this faithfully and—more importantly—believably. It's a somewhat subtle effect, but that subtlety yields a more believable result. This and other new effects—some not available in any other package on any desktop platform—will reportedly be part of the next major release of Lightwave.

Paul Beigle-Bryant is Foundation's equipment expert. Previously, he was the MIS controller for the Industrial Bank of Japan and ran their computer operations. His major responsibility now is making sure Foundation Imaging's equipment is working—or as he puts it, "I'm the one walking around with a screwdriver in his pocket."

A total of twelve Amiga 2000s are used, with eight dedicated to rendering. Each Amiga is equipped with an RCS Fusion-Forty '040 accelerator and 32MB of RAM; they all have Ethernet cards installed and are connected together using a Novell network and Oxxi's Netware product. Using a single control text file, Beigle-Bryant can control all of the Amigas and direct them to render the proper frames. Using ARexx, each computer looks to the control file for instructions. "At any moment in time I can say, 'What are you guys up to?' and they'll come back and say, 'This is what we're doing.' The way that it is built, we can run up to a hundred machines, theoretically."

Even with 32MB of RAM, there is still a limit to the number of objects that can be rendered in a single scene, especially when the Babylon 5 space station is used. This limitation is sidestepped by compositing rendered images over one another. Basically, within the memory limitation, objects are rendered a group at a time. When the second group is rendered, the previously rendered images are loaded as background images. Since this is all done digitally, there is no generation loss. As a result, this technique can be used an unlimited number of times.

Beigle-Bryant showed me most of the scenes that would be included in the show on his Sony recordable optical disk machine. Being able to view the animations frame by frame or full-motion was a treat for me. He commented on one particular animation that involved a ship entering a docking bay. The shadowing and interaction of various lights in the scene would be especially difficult and costly if done with models.

Another very impressive shot started with the camera looking through a window with live action. The live action was actually mapped onto a polygon in Lightwave behind the window frame. The camera then slowly pulls back showing the entire space station and various other plan-

Continued on page 158

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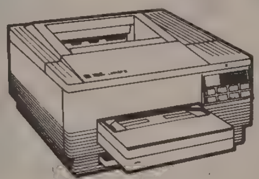

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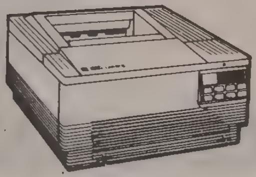

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Multimedia 101

Defining The M-Word—First In A Series

BY JONATHAN E.

When it comes to defining multimedia, I always think of the story of the elephant and the blind men. When considering the current state of multimedia and the promises made about its future, the story of the emperor's new clothes comes to mind.

This is not because of any deliberately criminal frauds committed by the tailors, but because, with such unbridled optimism about the future rampant in the forums of public opinion, there are few witnesses pointing out the difficulties of the present situation and the differences between now and the proposed future.

This column will attempt, over time, to describe the whole elephant and also to discuss the cut and fit of those clothes the emperor actually wears, and those he might possibly be wearing.

What is clearly fact is there's lively interest in the M-word, among the public and in the mass media. The word is bandied about by the metropolitan dailies; the glossy computer monthlies have special issues; even entertainment magazines and the newsweeklies have noticed that something is going on.

Over one thousand people (about one hundred were expected) recently attended the San Francisco State University Extended Education program's information session to learn about the courses offered in multimedia studies. The crowd was a mixed bunch of hippies and suits, with a few scattered cyberpunks, but mostly regular working folks. Multimedia has evoked evangelistic enthusiasm among both its practitioners and curious onlookers, so revolutionary fervor was high.

THE APPEAL OF MULTIMEDIA

This interest is natural enough. Working out the kinks and tangles of a new technology, especially one with as many levels of content and technical requirements as multimedia, is a challenging and attractive task. For corporations, new markets offer the possibility of huge profits, particularly for early entrants. We've recently seen vast fortunes made from mining the digital vein. The new frontiers formed by the information age, the globalization of popular culture and economic activities, and the pressures on natural resources caused by the population explosion, make ideal conditions for gold-rush behavior.

Historically, we're at an interesting juncture. The end of a millenium coincides with the dawning of a new digital age. Interest in the archaic, alchemical processes of making the mind's contents physically manifest is reviving. Multimedia appeals to that spirit. It has the relatively mundane possibilities of previous new media such as cassettes, television, or the telegraph. It also holds out the paradigm-changing possibility of being a new means of expression; of being the equivalent of writing, photography, animation, or sound creation; of being able to make the mind manifest in a new, comparatively unfettered way through the unique properties of combining all those means of expression with various digital properties and techniques.

MULTIMEDIA AND JOBS

All those SFSU attendees need to make a living.

The SFSU estimate is that there are forty companies employing three thousand people in multimedia in the Bay Area. Half that number are working in production, i.e., content, not software development. In two or three years, there may be as many as twenty-five thousand jobs globally—most of them here in the Bay Area. The most conservative projections are that the jobs will only double.

Currently most of the content work is in corporate presentations, training, and education. The market for consumer multimedia titles will come later. The questions about how much work there actually is got quite heated, while some of the answers about the size of the market got somewhat defensive: "There are lots of different numbers, but the growth is exponential." The Bay Area should be able to nurture such a newly conceived industry because of its accumulation of a "critical mass of assets" composed of venture capitalists who are used to working with technology companies, a modern infrastructure including fiber-optics links, educational institutions and think tanks, along with plenty of content and creative people with shared values about communicating.

This column will attempt, over time, to describe the whole elephant and also to discuss the cut and fit of those clothes the emperor actually wears, and those he might possibly be wearing.

SOME BASIC CONCEPTS

So what is multimedia?

As you might suppose from the elephant-and-

Copyright © 1993 by Jonathan E. Jonathan E. has worked with desktop multimedia since 1988. He also writes about world music and the Archaic Revival for BAM. His USPS mailing address is c/o SoundSwell, 54 29th St., Richmond, CA 94804. His email address is jeve@well.sf.ca.us

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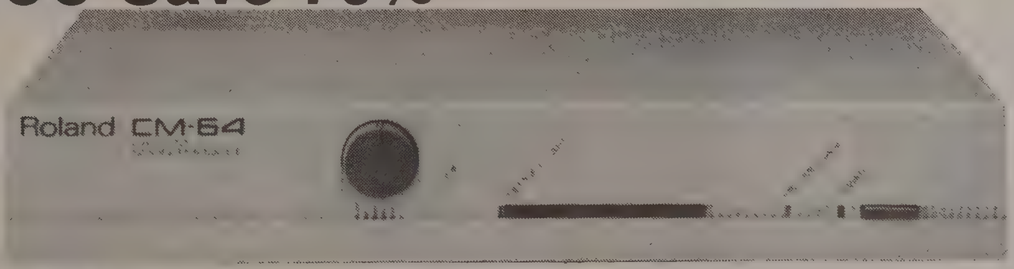

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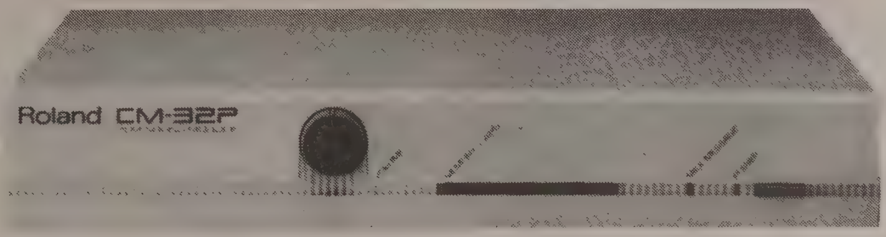

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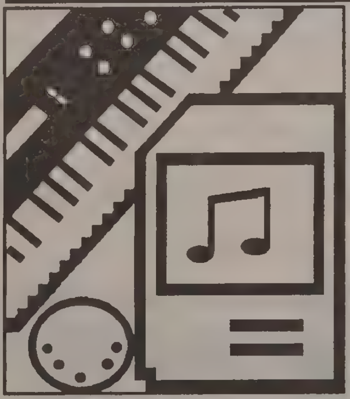

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> The main current drawback to CD-ROMs is the excess of different and changing standards. It's tough for publishers of multimedia material to know which standard to publish for, and it's tough for consumers to know what hardware to get.

blind-men analogy, it means different things to different people. Another way of illustrating it would be with a Venn diagram, where the circles represent such things as interactivity, CD-ROM, cross-referencing, hypertext, sound, and video. Different definitions and interests could overlap the circles differently to allow for their own interpretations.

Not all that long ago, multimedia primarily meant having a lightshow projected while a band played on stage; if it was a big production, maybe there'd be some dancers, or perhaps a live action painting going on at the same time. Live theatrical and musical performance and art installations are still important forms of multimedia, and many of the ideas and techniques used there have counterparts in desktop multimedia. In fact, much of the hardware and software is shared with desktop multimedia. The entry of such equipment into a home consumer market of millions is the obvious economic dream of the hardware side of multimedia.

At its simplest, all desktop multimedia means is that a personal computer is able to engage two of our senses, sight and sound, instead of the single one usually available, sight. The other senses are still only available in non-digital form, although some might argue that virtual reality offers a sense of motion. The recent excitement over multimedia has arisen, in some part, because desktop computers are now beginning to have the technical capability to show lifelike video with synchronized sound. But wait! It isn't in the stores quite yet!

That, however, is only the smallest and most technical tip of the iceberg. The real thrills, and perhaps more fundamental utility, of multimedia came several years earlier, and were more concerned with text and basic digital technology: the ability to search for and cross-reference the words you were interested in and an index that took you to *exactly* where those words occurred (i. e., didn't just give you the page numbers but showed you the highlighted words in context); the concept of hypertext, with similar but expanded cross-referencing abilities; and the user-controlled interaction of text with appropriate sounds and images.

A FEW WORDS ABOUT CD-ROM AND HARDWARE

CD-ROM (Compact Disk-Read Only Memory) is about the most frequently encountered term in multimedia. Ironically, however, it is not an intrinsic element—multimedia could theoretically work fine without CD-ROM.

However, linkage of text with sounds and images makes CD-ROM a practical necessity. Text doesn't take up much digital space, but sounds and images do—more than is usually convenient with floppies. A CD-ROM and its optical storage can hold a significant amount of digitized sound or graphics, whether still or moving, and thus provide a relatively convenient system of delivery. However, CD-ROMs are slow, and, judging from experiences with audio CDs, some will develop irritating problems of jumbling data and running poorly on different players.

The main current drawback to CD-ROMs is the excess of different and changing standards from CD-XA through CD-I to CDTV and beyond. It's tough for publishers of multimedia material to know which standard to publish for, and it's tough for consumers to know what hardware to get. While prices have dropped to realistic levels, the march of progress has not slowed, and it's hard to see a substantial consumer market developing while change is so rapid. That tough decision about the CD-ROM player and its driver software is only the beginning. The series of questions about RAM, processor speed, and so on has only one kind of answer: "More—Faster—Bigger." The question about whether your old computer can do the job is answered with an "Unlikely." The choices spread out before the eager consumer after answering the "Can I afford it?" question are indeed tempting and diverse.

Much of the problem here is that huge corporations are attempting to position themselves for long-term dominance of the market rather than solving the short-term questions in a cooperative way. The introduction of new technologies can only proceed at a certain rate, and there will be plenty of competing goodies for everyone's digital dollar. While multimedia has captured the imaginations of many, its capture of the market is not guaranteed—eight-track cartridges and Beta video serve as cautionary examples of technologies that did not satisfy their original

> While multimedia has captured the imaginations of many, its capture of the market is not guaranteed—eight-track cartridges and Beta video serve as cautionary examples of technologies that did not satisfy their original commercial potential. Sometimes it just takes a while—I recently read that the fax machine was first invented in 1843!

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---

1. What is your organization's primary business activity at your location?

☐ Aerospace
☐ Government
☐ Education
☐ Architecture, Engineering
☐ Communications: Advertising, Graphic Arts, Marketing, Public Relations, etc.
☐ Media: Broadcast, Film, Television, Publishing, etc.
☐ Manufacturing (computer, multimedia related): Computer/audio/video/audiovisual hardware, software, peripherals, etc.
☐ Manufacturing (other) ____________
☐ Dealer, retailer, distributor (other) ____________
☐ Accounting, Banking, Finance, Insurance, Real Estate
☐ Health, Medical, Legal
☐ Agriculture, Mining, Construction, Oil, Transportation, Utilities
☐ Research and Development
☐ Computer/multimedia contracting, consulting
☐ Consulting (other) ____________
☐ Other businesses and services ____________
☐ Other (please specify) ____________

2. Title: (Select one only.)

☐ Chairman/President/ Owner/Partner
☐ Vice President/General Manager
☐ Director/Department Manager
☐ Project Manager/Group Leader
☐ Creative Director/Designer/Producer
☐ Micro Manager/Coordinator/Specialist
☐ Network/Datacomm./Telecom Manager
☐ Manager/Supervisor (not listed above)
☐ Programmer/Analyst
☐ Architect/Engineer
☐ Specialist/Technician
☐ Scientist
☐ Educator
☐ Professional
☐ Consultant
☐ Representative
☐ Other (please specify) ____________

3. Deparment/Function: (Select one only.)

☐ Engineering/Technical
☐ MIS/DP
☐ Manufacturing/Operations/Production
☐ Administration/Management/Human Resources
☐ Accounting/Finance
☐ Advertising/Communications/Public Relations/Promotions
☐ Sales/Marketing
☐ Industrial design
☐ Corporate training
☐ Education
☐ Science/Research & Development
☐ Consulting
☐ Other (please specify) ____________

4. Which of the following operating systems are in use at this entire location? (Select all that apply.)

HW Operating Systems:

☐ DOS
☐ Windows
☐ OS/2
☐ Macintosh
☐ UNIX
☐ Other (please specify) ____________

LAN Operating Systems:

☐ Novell Netware
☐ Appleshare
☐ LAN Manager
☐ NFS
☐ Banyan VINES
☐ Other (please specify) ____________

5. Which of the following types of computers are used by you or members of your department or work group, or household. (Select all that apply.)

	Company	Household
IBM/Compatible 286 PC	☐	☐
IBM/Compatible 386 PC	☐	☐
IBM/Compatible 486 PC	☐	☐
IBM/Compatible Laptop/Portable	☐	☐
Other IBM Compatibles	☐	☐
68040 Macintosh	☐	☐
68030 Macintosh IIfx, IIci, IIcx, IIx, IIsi	☐	☐
68020 Macintosh II/LC	☐	☐
Macintosh Portable PowerBook	☐	☐
68030 Macintosh SE/30	☐	☐
Other Macintosh	☐	☐
Amiga	☐	☐
Workstation (HP, Sun, DEC, Silicon Graphics, NeXT, etc.)	☐	☐
Other Platform (please specify)	☐	☐

____

7. In which ways are you personally involved in your organization's decision to purchase these products? (Select all that apply.)

A. Multimedia-related hardware and peripherals

☐ Determine needs/features
☐ Evaluate brands
☐ Specify/recommend brands
☐ Specify/recommend vendors/suppliers
☐ Authorize the purchase
☐ Other (please specify) ____________

B. Multimedia-related software

☐ Determine needs/features
☐ Evaluate brands
☐ Specify/recommend brands
☐ Specify/recommend vendors/suppliers
☐ Authorize the purchase
☐ Other (please specify) ____________

6. Please indicate which of the following products you plan to purchase for household or company use? (Select all that apply.)

Multimedia-related Hardware /Peripherals	Company	Household
IBM/Compatible PCs	☐	☐
Macintoshes	☐	☐
Amigas	☐	☐
Workstations	☐	☐
Color monitors	☐	☐
Presentation monitors	☐	☐
Multimedia upgrade kits	☐	☐
Audio boards	☐	☐
Graphics boards	☐	☐
Digital/Analog video boards	☐	☐
MIDI sequencers/synthesizers	☐	☐
LCD display panels	☐	☐
Desktop scanners	☐	☐
Mice/joysticks/input tablets	☐	☐
Color printers	☐	☐
CD-ROM drives	☐	☐
Laser disc players	☐	☐
VCRs and VCR controllers	☐	☐
Video cameras	☐	☐
Laser printers	☐	☐
Color proofers	☐	☐
High-resolution scanners	☐	☐
Color scanners	☐	☐
Storage devices	☐	☐
Networking systems	☐	☐
Supplies/accessories	☐	☐
Color Copiers	☐	☐
Other (please specify)	☐	☐

____

Multimedia-Related Software	Company	Household
Authoring	☐	☐
Music composition/editing	☐	☐
Sound editing	☐	☐
2-D/3-D rendering/modeling	☐	☐
Animation	☐	☐
Desktop publishing	☐	☐
Draw/paint/image editing	☐	☐
Fonts	☐	☐
Presentation graphics	☐	☐
Clip art	☐	☐
Clip music	☐	☐
ip video/animation	☐	☐
Education application/titles	☐	☐
Electronic reference	☐	☐
Other (please specify)	☐	☐

____

8. During the next 12 months, will you specify, recommend, buy, or approve the purchase of multimedia-related hardware, peripherals, software, or services worth: (Select one only.)

☐ $1,000,000 or more
☐ $500,000 to $999,999
☐ $250,000 to $499,999
☐ $100,000 to $249,999
☐ $50,000 to $99,999
☐ $25,000 to $49,999
☐ $10,000 to $24,999
☐ $5,000 to $9,999
☐ Less than $5,000
☐ None of these

9. In the last 12 months, did you specify, recommend, buy, or approve the purchase of multimedia-related hardware, peripherals, software, or services worth: (Select one only.)

☐ $1,000,000 or more
☐ $500,000 to $999,999
☐ $250,000 to $499,999
☐ $100,000 to $249,999
☐ $50,000 to $99,999
☐ $25,000 to $49,999
☐ $10,000 to $24,999
☐ $5,000 to $9,999
☐ Less than $5,000
☐ None of these

10. How many people are employed in your entire organization, including all its branches, subsidiaries, and locations? (Select one only.)

☐ 1000 or more
☐ 500-999
☐ 100-499
☐ 25-99
☐ Less than 25

11. What areas in your company do you see using multimedia? (Select all that apply.)

☐ Training
☐ Product announcements
☐ Corporate presentations
☐ Sales and marketing
☐ Other (please specify) ____________

12. How do you usually buy computer hardware, software, accessories, and supplies?

☐ Through a local retail store
☐ Mail order
☐ Catalog
☐ Direct from manufacturer
☐ Direct from distributor
☐ Other (please specify) ____________

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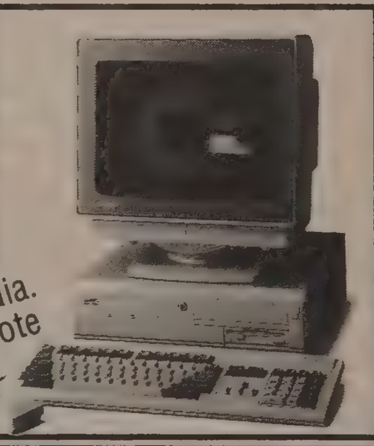

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commercial potential. Sometimes it just takes a while—I recently read that the fax machine was first invented in 1843!

ALL KINDS OF SOFTWARE

As with all digital technologies, the other part of the equation concerns software. Authoring software is what developers or publishers use to manipulate the various pieces of content—words (text or spoken), visuals (still, moving, animated, photographic, etc.)—into a pleasing relationship, together with all the cross-references, hypertext, and so forth, depending on the specific needs of that content and the production budget. Various programs have their specialized capabilities.

Like page-layout programs, some multimedia programs are able to import the contents of files created using other applications, e.g. a sound or a piece of text. In some cases, there is a standalone playback application that may be licensed so that your creation can run on machines without the whole authoring system. Otherwise, the complete application needs to be on all machines that will run your work.

Now we come to the absolute nub of multimedia: the actual content, the words, pictures, and sounds intended to impart some cumulative meaning that simple books, videos, and songs can't do on their own. Something Madonna couldn't do in her cobbled-together, and definitely extant, version of mass multimedia. The answer to a question at the SFSU info session about the learning curve of authorware was, "The programs can be learned. What we need more than anything else is conceptual power and imagination."

Some perceive the representation of conceptual power and imagination from the past as a key component of multimedia. Accordingly, well-known billionaires like Bill Gates are buying up the intellectual property rights for artwork of all kinds.

The content of currently available multimedia titles is as varied as seems reasonable for such a young field, ranging from expanded coffee table books through a poetry volume, an encyclopedia, and from children's animated books to musical analysis. My observation is that there's definite room for improvement. Reviews I have read of titles I'm familiar with have been either kind or shallow. In-depth reviews of multimedia titles will be an important part of this column.

ADVICE

Don't worry about the hardware races. Let the engineers wear themselves out! In the meantime, acquire a conceptual understanding of what's possible (everything!) by attending to your education.

The SFSU catalog has juicy course descriptions. The prices vary widely, but some seem like a pretty fair deal in this day and town. If you were to spend $75 and join the International Interactive Communications Society, the multimedia professional association, you'd get a 15% discount on class fees. The IICS number is (415)328-7318. There are other benefits to membership. To reach the SFSU Extended Education center, call (415)338-1373 or fax (415)338-7290 to find out how and when you can enroll.

Three private schools also offer various classes in multimedia areas: Center for Electronic Art, (415)956-6500; Computer Arts Institute, (415)564-5242; and Graphic Arts Institute, (415)543-9211. ■

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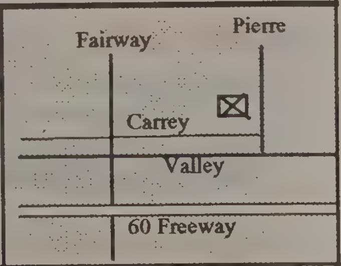

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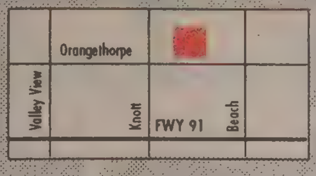

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486DX-33MHz	ISA	$450/$430
with 128K cache	EISA	$650/$630
and up to 32MB	Vesa Local Bus, 3 V.L. slots	$500/$480
486SX-33MHz	ISA	$350/$330
with 128K cache	Vesa Local Bus, 3 V.L. slots	$400/$380
486SX-25MHz	ISA	$320/$300
with 128K cache	Vesa Local Bus, 3 V.L. slots	$370/$350
386DX-40MHz with 64K cache		$185/$180
386DX-33MHz with 64K cache		$165/$160
386SX 33MHz		$125/$120
386SX-25MHz		$105/$100

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VESA local bus 1MB SVGA card (16.7 million colors)	$130/$125
VESA local bus Diamond Stealth 24, 1MB SVGA card (16.7 million color) *(New!)*	$175/$170
VESA local bus Diamond Viper VLB, 2MB VRAM SVGA card (16.7 million color) *(New!)*	$475/$460
VESA local bus IDE controller with AT I/O, 2 serial, 1 parallel, 1 game ports	$70/$65
VESA local bus IDE cache controller (4HD/2HD, 512K to 16MB, w/0K)	$200/$195
VESA local bus NE2000 Ethernet card, 10 Base T	$199/$195
EISA IDE cache controller card (4HD/2FD, 512K to 16MB w/0K)	$210/$205
EISA SVGA card with S3 chipset and 1MB VRAM	$310/$305
16bit NE2000 Ethernet card	$99/$95
16bit NE2000 Ethernet card, 10Base T	$109/$105
TVGA-9000 VGA Card w/256K (up to 512K)	$35/$34
TVGA-8900C 1MB Super VGA Card	$60/$59
Diamond SpeedStar-24 1MB VGA Card (16 million colors)	$150/$145
Diamond SpeedStar-24X 1MB VGA Card (16 million colors)	$175/$170
Super IDE (2HD/2FD with 2s,1p,1g)	$18/$17
Sound Blaster Pro	$145/$140
Promise IDE cache controller card (2HD/2FD, w/512K)	$130/$125
2400 baud internal modem	$40/$39
9600/2400 baud internal fax/modem	$60/$59

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14″ MGC SVGA monitor, .39 dot pitch, 1024x768	$215/$210
15″ MGC N.I. SVGA monitor, .28 dot pitch, 1280x1024 N.I., VESA stnd	$455/$445
14″ SHAMROCK N.I. SVGA monitor, .28 dot pitch, 1024x768 N.I.	$290/$285
14″ SHAMROCK SVGA monitor, .28 dot pitch, 1024x768 N.I.	$250/$245
17″ IMPRESSION 7 SVGA monitor, .28 dot pitch, flat screen, 1280x1024 N.I. flicker free 72Hz refresh, with digital auto-tracking	$899/$875

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Teac 1.44MB 3 ½ ″ FDD	$55/$52
TEAC 2.88MB 3 ½ ″ FDD	$110/$105
TEAC 2 in 1, 5 ¼ ″ 1.2MB & 3 ½ ″ 1.44MB dual half height FDD	$150/$145
170 MB Conner CP-30174 IDE HD (17ms, 64K cache)	$260/$255
130 MB Maxtor MX-7120A IDE HD (15ms, 64K cache)	$220/$215
213 MB Maxtor MX-7213A IDE HD (15ms, 64K cache)	$320/$315
240MB, Maxtor MX-7245A IDE HD (15ms, 256K cache)	$340/$335
340MB, Maxtor MX-340A IDE HD (13ms)	$525/$515
535MB, Maxtor LXT-535A IDE HD (12ms)	$870/$850
535MB, Maxtor LTX-535S SCSI HD (12ms)	$920/$900
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105 MB Seagate 3120A IDE HD (16ms, 32K cache)	$205/$200
250 MB Colorado DJ-20 Tape Backup System	$250/$245
250MB, Archive California 250 Tape Backup System	$210/$205
Sony internal CD-ROM Drive w/interface	$285/$275

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Hewlett Packard DeskJet 550C Color InkJet printer	$700/$680
High capacity print cartridge for HP 500 family	$34/$33
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Hewlett Packard Laserjet 4	$1375/$1350
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Color kit for the above printer	$45/$43

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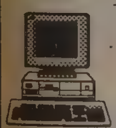

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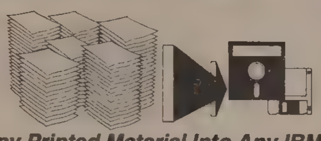

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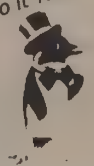

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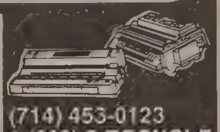

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Continued from page 142

ets and stars. Lightwave was not the only Amiga program used for special effects, however. The Foundation team also depended on ASDG's Art Department Pro and MorphPlus for various image processing. MorphPlus was used to distort people's faces in certain scenes. These moving morphs were done over a series of images, so you can see the actors move as the morph takes place. Moving morphs are very time-consuming, but when they're done right, the result is incredible. (It is important to note that many morphs that you see are actually still morphs; that is, there are only two images, a source and target image. Movement is artificially induced by having the components in the source and target images in different positions.)

FOUNDATION: THE FUTURE

Thornton and Beigle-Bryant give a lot of credit for getting the job done to Shannon Casey. As the producer for the company, she handled much of the busy work and organized the players to get the project out the door—on time and on budget.

The future impact of Foundation's technical achievement could be profound. Consider this: with an Amiga and the Video Toaster, someone at home could recreate the exact same special effects used in a major production.

The rub is, however, you need a lot of talent to create 3-D models approaching the magnificence of Ron Thornton's. Furthermore, it might take you quite some time to render all of the frames on a single Amiga versus Foundation's eight networked '040-equipped Amigas. Not everyone has an optical disk recorder to create the animations, not to mention gigabytes of disk storage space.

Not withstanding this, you can still create some jaw-dropping animations for home or semi-professional use using a more conservative system built around an Amiga, a 3-D rendering program, and Digital Creation's DCTV.

When I commented about the fact that now everybody will be doing *Babylon 5* stuff at home, Thornton smiled and quipped, "The more that get better, the more we can hire." ■

MICROTIMES STOCK INDEX HITS NEW RECORD HIGH

Continued from page 22

Once again, the Microtimes Stock Index bullied its way to record highs during the month-long trading period ended March 4.

Aided by reports that the economy grew a robust 4.8% in the fourth quarter of 1992, stocks in our sector notched impressive gains last period. For the full, month-long trading session, the Microtimes Stock Index rallied 44.39 points, or 1.09%, to a new record high of 4127.80. Conversely, the Dow Jones Industrial Average fell 43.23 points, or 1.26%, before closing at 3398.91.

In comparison, investors adjusted the NASDAQ Composite Index downward by 2.89% for the 30-day trading session, while the S&P 500 slipped .35% to 447.34.

Among computing stocks in the news: IBM rallied to a close of $54.88. For the month, IBM rose $2.88 a share, or 5.53%. The troubled computer maker announced that it will cut its payroll in Hudson Valley, NY, by a least six thousand jobs, up from the company's earlier estimates of approximately three thousand jobs.

Analysts were impressed with Digital Equipment after a briefing with Chairman Bob Palmer last month. The analysts said Digital impressed them with its plan to introduce a new generation of computers based on its RISC microchips. They were also pleased with the company's new management team and said Digital may be poised for a turn-around. For the period, Digital's stock sprinted ahead $4 a share, or 9.47%, before coming to a close of $46.25.

Sun Microsystems downticked 13 cents a share to $34.88. Investors were still disappointed regarding reports that the company would take a 10-cent-a-share charge against sec ond-quarter earnings as a result of settling securities class action suits. Sun had previously reported second-quarter earnings of 33 cents a share.

Intel led all stocks in the adjacent table on a dollar-gained basis as that stock soared $11.75 a share, or 10.99%. The company was able to catch a glimpse of its new 52-week high of $120, before slipping to a close of $118.63. Last month, the company approved plans to implement a 2-for-1 stock split. Separately, Alex Brown and Sons raised its investment rating for the firm to "strong buy" from "buy."

EXCH	COMPANY		TICKER SYMBOL	CLOSING PRICE 02/05/93	CLOSING PRICE 03/04/93	NET CHANGE IN MONTH	PERCENT CHANGE IN MONTH	P/E RATIO	ANNUAL DIVIDEND RATE	ANNUAL DIVIDEND YIELD	ANNUAL HIGH	ANNUAL LOW
	SOFTWARE											
OTC	Adobe		ADBE	41.63	44.00	2.38	5.71	23	0.32	0.73	56.50	25.25
OTC	Aldus		ALDC	16.75	19.00	2.25	13.43	41	0.00	0.00	30.00	10.25
OTC	Autodesk		ACAD	43.63	45.50	1.88	4.30	27	0.48	1.05	56.50	26.50
OTC	Borland		BORL	19.88	21.50	1.63	8.18	–	0.00	0.00	71.50	17.50
OTC	Informix		IFMX	38.25	34.50	–3.75	–9.[illegible]	20	0.00	0.00	42.00	12.13
OTC	Lotus		LOTS	24.25	26.13	1.88	7.73	14	0.00	0.00	38.75	14.75
OTC	Microsoft		MSFT	89.00	83.75	–5.25	–5.90	30	0.00	0.00	95.00	65.50
OTC	Novell		NOVL	30.00	29.13	–0.88	–2.92	33	0.00	0.00	33.50	22.50
OTC	Oracle		ORCL	32.00	33.25	1.25	3.91	54	0.00	0.00	36.38	12.00
OTC	Software Publishing		SPCO	12.50	13.13	0.63	5.00	–	0.00	0.00	26.25	6.75
OTC	Symantec		SY[illegible]C	12.88	9.75	–3.13	–24.27	–	0.00	0.00	48.75	5.88
	HARDWARE											
OTC	Apple		AAPL	57.25	55.00	–2.25	–3.93	13	0.48	0.87	65.25	41.50
OTC	AST Research		ASTA	17.50	14.50	–3.00	–17.14	8	0.00	0.00	24.25	11.25
NYS	Commodore	(L)	CBU	5.50	5.38	–0.13	–2.27	–	0.00	0.00	16.25	5.25
NYS	Compaq		CPQ	48.13	45.00	–3.13	–6.49	17	0.00	0.00	58.50	22.25
NYS	Digital Equipment		DEC	42.25	46.25	4.00	9.47	–	0.00	0.00	60.50	30.38
OTC	Dell		DELL	39.25	30.25	–9.00	–22.93	14	0.00	0.00	49.88	15.00
NYS	Hewlett–Packard		HWP	68.50	75.88	7.38	10.77	23	0.80	1.05	85.00	50.25
NYS	IBM		IBM	52.00	54.88	2.88	5.53	–	2.16	3.94	100.38	45.88
NYS	Silicon Graphics		SGI	30.38	28.88	–1.50	–4.94	–	0.00	0.00	33.00	14.13
OTC	Sun Microsystems		SUNW	35.00	34.88	–0.13	–0.36	26	0.00	0.00	41.00	22.50
NYS	Xerox	(H)	XRX	86.38	83.00	–3.38	–3.91	–	3.00	3.61	88.88	66.75
NYS	Tandy		TAN	28.00	25.75	–2.25	–8.04	12	0.60	2.33	32.13	22.25
	CPU'S											
NYS	Advanced Micro Devices	(H)	AMD	19.63	22.63	3.00	15.29	9	0.00	0.00	22.63	7.38
OTC	Intel	(H)	INTC	106.88	118.63	11.75	10.99	24	0.40	0.34	120.00	46.50
NYS	LSI Logic		LSI	10.50	11.75	1.25	11.90	–	0.00	0.00	12.25	4.88
NYS	Motorola		MOT	53.38	59.38	6.00	11.24	27	0.44	0.74	63.00	36.44
	COMMUNICATIONS											
NYS	AT&T	(H)	T	53.50	57.25	3.75	7.01	20	1.32	2.31	57.25	37.50
NYS	BellSouth Corp.	(H)	BLS	52.75	57.13	4.38	8.29	17	2.76	4.83	57.13	43.38
OTC	MCI		MCIC	39.88	41.50	1.63	4.08	19	0.10	0.24	43.38	29.50
NYS	Northern Telecom		NT	42.50	44.00	1.50	3.53	20	0.36	0.82	48.00	30.50
NYS	Pacific Telesis		PAC	46.63	47.25	0.63	1.34	16	2.16	4.57	47.25	36.88

KEY: NYS = NEW YORK ASE = AMERICAN OTC = OVER THE COUNTER
(H) = NEW HIGH REACHED IN PERIOD (L) = NEW LOW REACHED IN PERIOD

MARKET DIARY:

ADVANCES....................	19
DECLINES.....................	13
UNCHANGED................	0
NEW HIGHS..................	5
NEW LOWS....................	1

MOST ACTIVE ISSUES:

LARGEST DOLLAR GAINER.........................	Intel..	$ 11.75	
LARGEST DOLLAR LOSER..........................	Dell...	$ –9.00	
LARGEST PERCENTAGE GAINER...............	Advanced Micro Devices.............	15.29	%
LARGEST PERCENTAGE LOSER.................	Symantec.......................................	–24.27	%

	CLOSE 02/05/93	CLOSE 03/04/93	NET CHANGE IN MONTH	PERCENT CHANGE IN MONTH
MICROTIMES STOCK INDEX	4083.40	4127.80	44.39	1.09
DOW JONES INDUSTRIAL AVERAGE	3442.14	3398.91	–43.23	–1.26
STANDARD & POOR'S 500 STOCK INDE	448.93	447.34	–1.59	–0.35
N.Y.S.E. COMPOSITE	247.60	246.53	–1.07	–0.43
NASDAQ COMPOSITE	700.98	680.73	–20.25	–2.89

CLOSING QUOTES FOR GRAPH:

DATE	MICRO TIMES	DOW JONES
07/31/92	3367.19	3393.78
08/28/92	3198.48	3267.61
09/25/92	3313.28	3250.32
10/23/92	3536.03	3207.64
12/10/92	3825.83	3312.19
01/11/93	4020.09	3262.75
02/05/93	4083.40	3442.14
03/04/93	4127.80	3398.91

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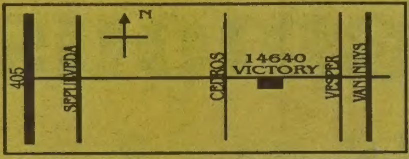

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The Infamous Do-It-Yourself Column

Or So Many Good Ideas Out There It Makes My Brain Itch

BY JOHN C. DVORAK

DVORAK'S LAST COLUMN

There's no reason you, the reader, can't become a reputed columnist. The ideas are all there, online, in the newspapers, and heard over the phone.

For example, I get a phone call from John Markoff of the *New York Times*. "Dvorak," he says. "IBM just announced a new CEO this morning."

"Oh, really? Who?"

"Dr. Jack Kevorkian!! Hehehehe."

Apparently it was a joke floating around the *Times* office. But it also is the basis of a good column: joke CEOs for IBM is a start. But how about taking every computer company and naming a wacky CEO to head it? Surely someone with a sense of humor can crank out one thousand words with that concept.

The online world is a gold mine for column ideas. Here's some offhanded comments from various online gurus. Each one could easily become a column if researched or extrapolated. They come in about four major forms.

The Criticism: *It is amazing that IBM hasn't trumpeted the fact it uses DMA for serial communications on the PS/2 line, and that they all have the 16550 UART. It is equally amazing that not a single magazine has noticed this either, and commented favorably or otherwise.* **—Earle Robinson**

Copyright © 1993 by John C. Dvorak. All rights reserved. John C. Dvorak graduated from the University of California. He is a contributing editor of PC Magazine *and* MacUser, *and is considered by many to epitomize the contrarian view of things—a charge that he vehemently denies. Dvorak's motto is: If you have nothing nice to say, then don't say anything at all.*

The Cynical Observation: *The BASIC that was on the PDP-10 back in the early '70s was from First National City Bank (or something like that). It was an interpretive BASIC and looked/acted/felt just like the first BASIC that Gates released.*

The source code for that PDP-10 BASIC was available online and was never really guarded at all.

The coincidence between the similarities of those two BASICs is really rather amazing.... **—Ross Greenberg**

The Elaborate Query With An Agenda: *I was wondering if you could answer a question for me: Why is there no dependable standard for asynchronous port access on a PC? Every other I/O operation on PC systems has a workable INT level access point. DOS File and Device I/O, Parallel Port I/O, EMS/XMS memory I/O, and NetBIOS/Novell IPX network I/O all have standard INT level access which makes diagnostic and add-on utilities such as print spoolers, file access loggers, remote I/O utilities, and multiuser/multitasking managers easy to design for these I/O operations. The only serial INT level standard that was supplied with the PC when it was introduced are the INT 14h hooks that were mainly designed for serial printer access and are* completely *unusable by modems or other high-speed two-way serial devices. Hence, any communications software that's worth its salt has to interface directly with the UART chip and the system interrupt controller making it next to impossible to cooperate with other communications software that might be running in the system. The only major exception to this is the FOSSIL INT 14h extension standard that has evolved from the BBS community. This standard is not perfect, but it's the best 80x86 asynchronous standard available!*

Microsoft is probably the only entity that can really push a globally accepted asynchronous access standard. What's keeping them from releasing an INT 14h software extension (or other standard) that we can all build upon? As I see it, the serial ports are the number one biggest I/O management headache when dealing with PCs. Maybe there's someone who's already working on this, but if not, it sure seems like there ought to be! **—Dave Bennett**

You also find humorous ridicule and other forms of messages, which can all lead to a column.

If this fails you can surely find something in a newspaper article to discuss. I found this little Daniel Southard ditty in the *Washington Post*:

Harry Wu, former Chinese political prisoner, has a message that he hopes will shock Congress, the White House, and the public: Some of the goods Americans buy—including even the clothes they are wearing—may have been manufactured in the harsh conditions of Chinese labor camps and imported here in violation of US laws.

This was later extrapolated into a report on a couple of network TV news shows, but is still a good topic. But with this kind of article you have to stretch it *into* the high-tech field by doing a lot of research. Most of the Chinese labor slaves make little dolls and gizmos that go to hamburger chains or toy makers.

More direct is the obscure high-tech news story that the writer has to dig up by reading foreign magazines and newspapers. Here's an excerpt from the *Australian*, one of Sydney's newspapers. It's from the November 23, 1987, issue which gives you some kind of indication as to the database capabilities of my system and a sense of how long you may want to keep things—just in case you someday need them as in this case where I need a perfect example.

The article had a banner headline which read.

SABOTEUR TRIED TO BLACK OUT AUSTRALIA

The heart of Sydney's business district remains in chaos after a dangerously well-informed saboteur wreaked havoc on the city's fragile telecommunications system in an attack intended to destroy [Australian] Telecom's operations nationwide...Investigators described the sinister saboteur as a lone former Telecom employee with expert knowledge of the underground cables network...The attacker entered the underground tunnels and severed 24 of the 600 heavy cables in 10 carefully selected locations. The bizarre attack knocked out 35,000 telephone lines in 40 Sydney suburbs and brought dozens of...ATMs, POS, stores, telex, facsimile and betting office services to a standstill...

It goes on an on with grim details, few of which were covered by the US media. Surely there are a number of columns and articles which a story like that could generate. Maybe even a book.

Finally, the last column technique is to take all your notes and make them into a column about how to make columns. It's easier and just as entertaining.

At least I think so. ■

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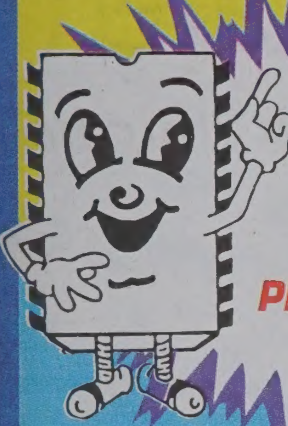

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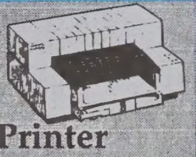

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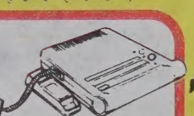

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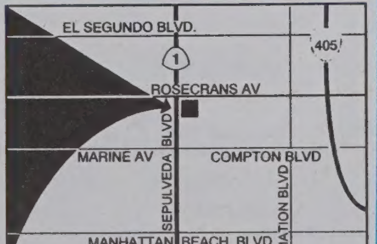

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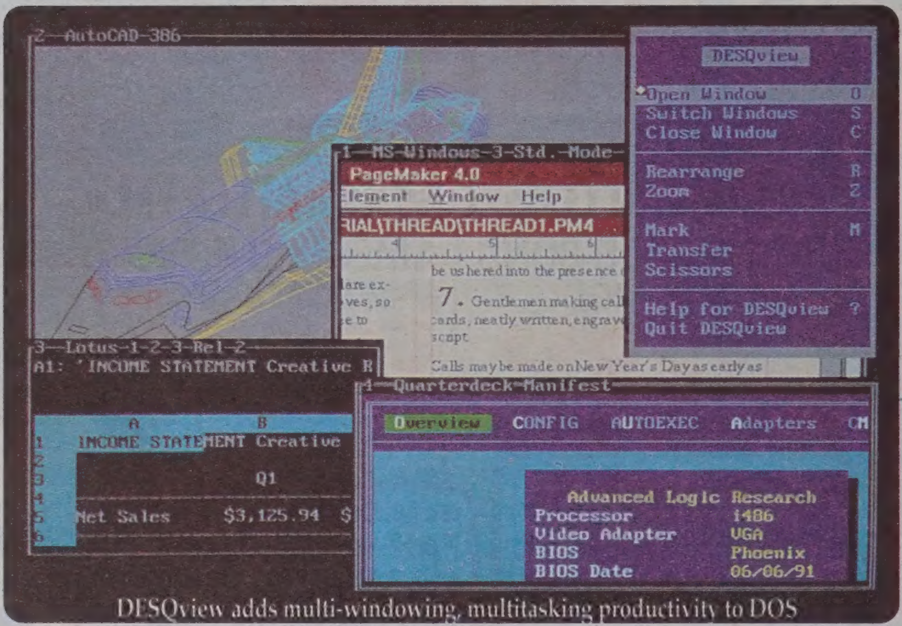

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2		
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4		
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6		

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